UNITED
NATIONS

E

Economic and Social Council

Distr.
GENERAL

E/CN.17/1996/20
29 February 1996

ORIGINAL: ENGLISH

COMMISSION ON SUSTAINABLE DEVELOPMENT
Fourth session
18 April-3 May 1996

PROGRESS IN THE IMPLEMENTATION OF THE PROGRAMME OF ACTION FOR THE SUSTAINABLE DEVELOPMENT OF SMALL ISLAND DEVELOPING STATES

Sustainable development of coastal areas, tourism, energy resources, air transport, maritime transport, telecommunications, and management of natural and environmental disasters in small island developing States

Report of the Secretary-General

CONTENTS

		Paragraphs	Page
INTRODUCTION		1 - 4	2
I.	COASTAL AREA MANAGEMENT	5 - 9	3
II.	SUSTAINABLE TOURISM	10 - 23	3
III.	ENERGY RESOURCES	24 - 29	6
IV.	NATURAL AND ENVIRONMENTAL DISASTERS	30 - 38	7
V.	TELECOMMUNICATIONS	39 - 46	10
VI.	AIR TRANSPORT	47 - 61	11
VII.	MARITIME TRANSPORT	62 - 79	14

96-04770 (E) 020496 040496

INTRODUCTION

1. The General Assembly, in its resolution 49/122 of 19 December 1994, requested the Commission on Sustainable Development to carry out, in 1996, an initial review of the progress achieved and steps taken to implement the Programme of Action for the Sustainable Development of Small Island Developing States. 1/ To meet that request, the Inter-Agency Committee on Sustainable Development, at its meeting in July 1995, decided, inter alia, that a separate report should be prepared on each of the following issues identified in the Programme of Action: coastal area management, tourism resources, air transport, maritime transport, telecommunications, energy resources, and natural and environmental disasters. These reports are to be found in the seven addenda to the present report, as follows:

(a) Management of natural and environmental disasters in small island developing States (E/CN.17/1996/20/Add.1);

(b) Sustainable development of energy resources in small island developing States (E/CN.17/1996/20/Add.2);

(c) Sustainable tourism development in small island developing States (E/CN.17/1996/20/Add.3);

(d) Maritime transport in small island developing States (E/CN.17/1996/20/Add.4);

(e) Sustainable development of air transport in small island developing States (E/CN.17/1996/20/Add.5);

(f) Development of communications in small island developing States (E/CN.17/1996/20/Add.6);

(g) Coastal area management in small island developing States (E/CN.17/1996/20/Add.7).

2. The present report pulls together the seven themes and presents the major additional findings that serve to deepen understanding of the issues in each sector as task managers in the various United Nations bodies have reflected on the basis for action agreed upon in the Programme of Action.

3. The report does not reiterate the actions and policies to which Governments committed themselves in adopting the Programme of Action.

4. Based on the analysis provided by the task managers in each area, the present report instead contains a menu of recommendations which, if implemented along with those contained in the Programme of Action, would enhance sustainable development in the respective areas. In some cases, the recommended measures can be considered as complementary. In other cases, they add greater specificity to the measures agreed in the Programme of Action.

I. COASTAL AREA MANAGEMENT 2/

A. Major additional findings

5. In addition to the basis for action described in chapter IV of the Programme of Action, it may be noted that problems of coastal area management in small island developing States (SIDS) stem from inappropriate development policies and practices, the absence of integrated approaches to the management and conservation of resources, inadequate institutional and infrastructural capacity, limited human resource capacity, and a lack of public awareness of and involvement in the issues of coastal area management.

6. Given the importance of coastal resources, the authorities in many small island States have begun putting in place some measures for safeguarding those resources. So far, the focus of action has been mainly on particular subsectors whose problems are the most severe. Effective management will call for the following priority policies and measures.

B. Recommendations for action

At the national level

7. Policy development: Adoption of appropriate policies and economic instruments for the internalization of the environmental costs of coastal resource use and for their rational management with a view to changing patterns of use and exploitation.

At the regional level

8. Marine pollution standards: Establishment at the regional level of appropriate criteria for sewage, effluents and coastal water standards in order to deal effectively with coastal and nearshore water pollution.

At the international level

9. For effective coastal area management, SIDS will need the cooperation of the international community in the following area:

International coordination: Coordination of the activities of international organizations in SIDS, with a view to enhancing their effectiveness in realizing the goals of integrated coastal area management (ICAM).

II. SUSTAINABLE TOURISM

A. Major additional findings

10. Looking to the future, there are indications that the development of tourism in SIDS will be subject to two current global trends. First, global travel and tourism output is expected to grow more rapidly in coming years,

outpacing the growth of world economic output. This trend is expected to reinforce current trends in SIDS. Secondly, tourism development in SIDS will be shaped by the growing interest in, and demand for, specialty tourism, particularly nature tourism propelled by growing environmental awareness.

11. From the point of view of the future course of action, the following findings on the economic, social and environmental aspects of tourism in SIDS are worthy of note:

(a) Economic aspects: (i) Generally, the leakages through imports out of direct tourist expenditures to meet the needs of the tourism sector itself are extremely high in SIDS; (ii) the daily expenditures per visitor vary from country to country but are generally low; (iii) excessive reliance on tourism carries many risks, including excessive exposure to international economic shocks, and weakening of intersectoral linkages which, inter alia, reduces the potential benefits from tourism;

(b) Social aspects: Rapid development of tourism, particularly mass tourism, can have significant adverse social impacts on small islands. The following are of particular significance: (i) persistent inflationary pressures pose the danger of significantly lowering the standard of living of high proportions of island populations; (ii) the social carrying capacity of small islands quickly reaches its limits of tolerance as the ratio of visitors to the local population rises; (iii) prolonged growth of mass tourism is accompanied by increased incidence of crime, and spread of drugs and diseases, including the human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), both of which can devastate the small populations of small islands;

(c) Environmental aspects: Intensive tourism development and tourism activities, particularly if not properly planned and managed, can very quickly cause environmental damages in SIDS. The most notable impacts are observable in (i) land degradation and loss of terrestrial and marine biodiversity; (ii) increased levels of pollution from dumping of solid and liquid wastes generated by tourism activities on land and in the sea; (iii) coastal zone degradation through intensive sand mining, removal of mangrove forests and destruction of coral reefs, soil erosion and destruction of landscape owing to tourism facilities and associated infrastructures; (iv) excessive groundwater pumping and consequent lowering of water tables to meet the demand of the water-intensive tourism industry for freshwater.

B. Recommendations for action

At the national level

(a) Policies and measures for enhancing economic benefits

12. Policy: Enhance the economic benefits from tourism by: (i) diversifying the tourism product, enhancing its quality and increasingly targeting the upper segment of the tourist market; (ii) strengthening linkages of other economic sectors with tourism so that domestic production can viably provide for the consumer needs of tourists to the maximum extent possible; (iii) increasing the

participation of nationals in the tourism sector by encouraging domestic investments and, as necessary, joint ventures with foreign investors so as to minimize the proportion of profits generated by the tourism sector that are repatriated by foreign investors; (iv) encouraging the maximum use of local materials in resort construction so as to reduce the imports of construction materials; (v) increasing investments in the training of local people for the tourist industry in order to reduce dependence on foreign entities, particularly in the area of overseas promotion and marketing, ground handling and domestic operation of tourism services; and (vi) minimizing financial incentives granted to foreign investors, by reducing national risks.

13. Information: Invest adequately in the collection of data on all relevant indicators of benefits and costs necessary for costs-benefits analysis in order to be able to carry out systematic evaluations of the contribution of the tourism sector to the domestic economy in relation to other sectors and in relation to social and environmental costs.

(b) Measures for coping with the adverse social and cultural impacts of tourism

14. Policy: Make efforts to keep the ratio of the visitor population to the local population at an acceptable level through appropriate diversification of the tourism product and the tourist market, particularly if mass tourism has been promoted for a long time in the past.

15. Public education: Develop and put in place effective educational programmes to raise the awareness of the local population about the good and bad aspects of tourism. Such programmes need to emphasize tourism as cultural exchange, counter undesirable demonstration effects of tourists' lifestyles on the local culture and consumer habits and emphasize the pernicious consequences of the spread of drugs and diseases, particularly HIV/AIDS.

16. Security: Strengthen security measures country-wide against crime and drugs, particularly in areas most frequented by tourists.

(c) Measures for coping with environmental impacts

17. Project appraisal: Develop a multidisciplinary approach for rigorous vetting of tourism development proposals, taking into account prospective cumulative impacts of tourism development, and establish environmental standards for approval of projects.

18. Economic instruments: (i) Review and revise, as appropriate, existing taxes and subsidies to ensure that they are in fact conducive to sustainable development, and develop additional economic instruments to better internalize environmental costs, for example, fiscal incentives or grants or loans for creating or improving the necessary environmental infrastructure, such as sanitation plants, existing facilities and deposit-refund systems for containers of beverages and other canned goods to discourage littering; (ii) develop and impose appropriate user fees for the use of national terrestrial and marine parks and reserves, and earmark the accrued receipts for purposes of improvement and management of sensitive areas; (iii) require the tourism industry, through

appropriate user charges, to meet the full cost of freshwater it uses, and to contribute adequately to solid waste management and cleaning of beaches.

19. Sustainable marketing: Define and implement a sustainable marketing strategy in cooperation with all partners involved in the tourism industry.

At the regional level

20. Sustainable marketing: Define and implement a sustainable marketing strategy at the regional level.

21. Financial incentives to foreign investors: Adopt uniform incentives at the regional level to reduce competition among SIDS to attract foreign capital.

At the international level

22. Financial and technical assistance: (a) Provide international assistance for the development of basic physical infrastructures such as airports and harbours, roads, telecommunications systems and freshwater systems to SIDS, especially the least developed among them; (b) provide assistance to regional tourism organizations in order to increase their effectiveness.

23. Code of conduct: Formulate, ratify and enforce a universal or at least a regional code of conduct for the tourism sector at the intergovernmental level.

III. ENERGY RESOURCES

A. Major additional findings

Energy demand

24. Imported petroleum products, the major source of energy, are used for transportation and electricity generation. On average, more than a third of the petroleum is converted to electricity. Electricity generation is costly because most systems are on a small-to-very-small scale. In a number of SIDS, the share of petroleum imports in total imports is comparable to that of other developing countries. In a number of others, however, it is much higher, exceeding the value of total merchandise exports.

25. Solar energy is used for water heating in urban houses as well as commercial establishments, for drying of crops and for water purification and distillation on a limited scale. For instance, in recent years, the use of solar energy has increased in the Pacific islands. Following a number of demonstration projects in the early 1980s, solar water heating has increased in the Pacific islands, particularly in upper-income homes, hotels and commercial establishments. Solar photovoltaic systems have also been used as an alternative to diesel generation for the electrification of remote areas.

Energy resources

26. Of renewable sources of energy, other than hydropower, biomass accounts for the major share in small island countries. Fuelwood is most commonly used for cooking, especially in rural households. Practically, all fuelwood for cooking is obtained at no financial cost from natural forests. Very few island countries have forest areas covering a substantial part of their land area and few of them have any sizeable commercial production of fuelwood. Increased demand for fuelwood has led to much deforestation in many SIDS. In addition to wood, residues from agricultural commodities constitute a significant source of energy.

27. Prospects have been improving for electricity generation by wind turbines, but much depends on the availability of suitable sites. Several SIDS have favourable sites for wind energy; they are, however, prone to severe storm conditions. Most islands have abundant solar and ocean resources; some also have significant hydropower potential. A number of them also have geothermal resources. However, in spite of some efforts to develop indigenous energy resources, the overall contribution of renewable energy sources to the energy balance of most SIDS has remained small.

28. The development of indigenous new and renewable sources of energy should focus on the few options that hold out the promise of technical, economic and financial viability. The renewable energy technologies and resources that appear to be more promising in the near term are solar photovoltaic-based utilities, particularly for remote islands; large-scale and mini-hydropower plants, where adequate sites and institutional support are available; wind turbine generators, depending on favourable wind regimes; and the enhanced use of biomass fuel, where good sustainable biomass cover exists. In the long term, ocean thermal and seawave power may prove to be substantial energy sources, although so far attempts at their commercial development have not met with success.

B. Recommendations for action

29. Finance: To implement projects that would ensure a sustainable fuelwood industry, seek assistance from the international community, including from the Global Environment Facility (GEF), for commercial energy development based on those renewable sources with demonstrated viability, and to assist with the financing of investments necessary to expand energy supplies beyond urban areas.

IV. NATURAL AND ENVIRONMENTAL DISASTERS

A. Major additional findings

30. A critical factor in the vulnerability of SIDS is their limited capacity to reactivate the development process, in particular in the least developed small island States. The fragility of their ecosystems and their limited human resources often preclude any possibility of developing and implementing meaningful disaster-mitigation programmes and the substantive vulnerability

studies called for in this respect. In many of them, forecasting and warning dissemination systems are inadequate, affordable insurance against disasters is unavailable and disaster emergency funds are lacking.

31. Equally, environmental hazards can have serious impacts on small island States. The pollution of marine living resources, both from land-based sources and transit shipping, is an area of particular concern.

32. Progress has been made to varying degrees in addressing disaster problems in most small island developing States. In the small island States in the Caribbean and the South Pacific subregions, progress relates primarily to the strengthening and building of institutional disaster-management capacities at the national and local levels, as well as to the promotion of respective regional and subregional levels. The small island States outside those subregions have been generally less successful in realizing concrete progress in disaster reduction. This may be attributable in part to the lack of comparative mechanisms of cooperation between those small island States, even though they face similar problems and opportunities for disaster reduction.

33. Natural disaster reduction contributes, as a cross-cutting issue, to poverty alleviation through sound environmental management, the protection of natural resources and the achievement of sustainable development. The implementation of Agenda 21, the pursuit of concrete progress with regard to the Programme of Action for the Sustainable Development of Small Island Developing States, and the efforts to attain the goals and objectives of the International Decade for Natural Disaster Reduction (1990-2000) must go hand in hand.

34. The priority areas need to be addressed through coherent national programmes that aim to achieve the targets of the International Decade for Natural Disaster Reduction by the year 2000, while at the same time implementing chapter 2 of the Programme of Action for the Sustainable Development of Small Island Developing States. Not all small island States have yet been able to establish these programmes. This, together with the generation of the necessary policy support for disaster-reduction activities, is a particular priority need. In addition, consolidation and further strengthening of regional cooperation mechanisms in the Pacific and the Caribbean are required.

B. Recommendations for action

At the national level

35. Priority areas: (a) Improve the use of traditional systems for disaster reduction and preparedness; and (b) develop appropriate national insurance programmes.

At the regional level

36. Institution building: (a) Formalize and strengthen cooperation arrangements at the regional level through the designation of a regional policy body for disaster reduction; operationalize working arrangements for disaster mitigation, preparedness and response; and consolidate existing disaster-

reduction programmes; (b) consider the establishment of an interregional mechanism for training in disaster reduction, in particular by facilitating liaison between existing institutes and programmes.

At the international level

37. Institution building: (a) Provide support for the establishment of a mechanism for interregional cooperation and exchange of small island States in disaster reduction, in particular in training, institutional development and disaster-mitigation programming; and (b) establish an international programme on disaster reduction in small island States to facilitate the implementation of disaster-reduction programmes and to provide a framework for cooperation and exchange in support of disaster reduction in small island States.

38. Research: Provide support for the targeted research and further development of knowledge in the following thematic areas for building risk-reduction capacities in small island States:

(a) Insurance as a preventive and mitigating tool for disaster reduction;

(b) Telecommunications and information management as a tool for disaster reduction;

(c) Limits and opportunities for the establishment of national disaster emergency funds and emergency administrative procedures;

(d) Evaluation of constraints in small island developing States' access to reliable data, disaster-specific knowledge and technology;

(e) Review of the linkages between disasters, development and environment, including the development of methods for systematic appraisal of developments in relation to disaster risks;

(f) Analysis of the linkages between global climate change and the characteristics and occurrence of natural hazards in small island States.

V. TELECOMMUNICATIONS

A. Major additional findings

39. SIDS as a group have relatively well-developed internal networks. At the country and regional levels, however, there are marked differences. Internal networks are least developed in the least developed and the archipelagic SIDS. The extent of integration into international networks also varies between regions and countries. There remains plenty of room for further growth and improvement of telecommunications in all SIDS. Even where it is most developed, for example, Singapore and Malta, no saturation of traditional and new services is on the horizon.

40. Aside from resource constraints for expansion and modernization, SIDS face a number of problems in the area of telecommunications: (a) poor maintenance of

equipment owing to poor planning and unorthodox installation practices; (b) frequent damage done to telecommunications infrastructure by hurricanes; (c) increasing cost of human resources development owing to rapid change in technology and techniques which call for higher calibre trained personnel; (d) poor management owing to monopolistic structures and inadequate human resources; (e) high tariffs for telecommunication services owing to monopolistic structures; (f) high per capita cost of infrastructure, especially in the archipelagic SIDS, with few benefits from economies of scale.

B. Recommendations for action

At the national level

41. Policy: (a) Define clear universal service objectives and specify how, within prevailing conditions, they can be achieved; consider imposing preconditions for franchising or privatization of lucrative services such as mobile communications or international services, for instance by stating obligations to develop rural telecommunications in the licensing conditions of new operators; (b) where public or private telecommunications monopolies still exist, take steps to create a competitive environment through restructuring and liberalization of service provision and market access; (c) make greater efforts to take advantage of new international telecommunication projects and institutions such as WorldTel.

42. Institutional development: Create an adequate regulatory entity to assure harmonious growth of an increasingly complex and rapidly changing industry.

43. Investment: Increase investment in telecommunications development in order to increase the penetration of basic telecommunications facilities to achieve universal availability of those services and to facilitate the introduction of new services for the information society of the twenty-first century.

At the regional level

44. Policy: Maintain and strengthen communications and business links on a regional and subregional basis with their larger neighbours in the continental shelves, as well as with development partners abroad.

At the international level

45. Finance: (a) Assist SIDS in identifying the best ways and means of securing financial assistance from different sources; facilitate understanding of the requirements and obligations of each party (government, development partners, private sector); (b) encourage the World Bank and the regional development banks to systematically fund a series of projects over a number of years to finance telecommunications development where most urgently needed.

46. Allocation criteria: Encourage the development banks to work together to develop a common set of criteria to be used when evaluating potential projects.

VI. AIR TRANSPORT

A. Major additional findings

47. The majority of SIDS have their own airlines; some, particularly in the Pacific and the Caribbean, that do not are co-owners of a regional airline, notably Air Pacific and Leeward Islands Air Transport, respectively. In addition to national and regional airlines, SIDS are served by foreign carriers: the Caribbean SIDS by North American, European and some other airlines; the Pacific SIDS essentially by Air New Zealand; and the African SIDS essentially by European airlines.

48. Owing to inadequate information, a thorough assessment of the viability of SIDS airlines could not be made. Financial information available for about one half of the scheduled airlines of the Caribbean and Pacific SIDS indicates that in most cases their recent operations have not been profitable.

49. The services provided by national and regional airlines of SIDS vary widely. Some airlines in all the regions provide services to other SIDS and to some continental countries in their regions. Singapore, Malta, Cyprus and Bahrain are among the best served SIDS. At the regional level, with important exceptions in all regions, the best served SIDS are those in the Caribbean and the least served those in the Pacific. For most Pacific and African SIDS, service frequencies on international routes are low.

50. In the interest of public health, most SIDS adopt "in quarantine" measures as defined by the World Health Organization (WHO); some also require disinfecting of aircraft. With regard to safety, SIDS largely share the same concerns as other developing States, although the extreme weather conditions experienced by a number of SIDS may pose additional problems. Through the International Civil Aviation Organization (ICAO), agreement has been achieved on the necessary level of standardization for the operation of safe, regular and efficient air services. This has resulted in high levels of reliability in all the various areas that collectively make up international civil aviation.

51. Since the Barbados Conference, there has been significant air transport development affecting Caribbean SIDS at the government level. The Association of Caribbean States (ACS) adopted a Declaration of Principles on Tourism, Trade and Transportation and Plan of Action in August 1995 in which they stressed the importance of the principles of easy access and equal opportunity to affordable air (and maritime) transportation as indispensable factors in the economic integration of the ACS region. In the Pacific, no specific air transport proposals have yet emerged.

52. Significant developments at the airline levels in the Caribbean include privatization and mergers of existing airlines, formation of commercial alliances among airlines and the creation of a new airline. In the Pacific, there has been an expansion of services of one airline, increased commercial links among some airlines and various cooperative arrangements between some of the inter-island carriers on aircraft sharing and sharing of seats on individual flights.

53. With regard to innovative, energy-efficient and low-cost air transport solutions, no significant progress has been made.

54. As a result of increased costs and competition, structural changes are taking place in the air transport industry at the world level. These include the privatization of many government-owned airlines, the formation of commercial alliances between airlines and various forms of inter-airline cooperation. Many developments in international air transport will inevitably affect SIDS. For example, with international airlines being encouraged to use their own commercial judgement, their services to and from SIDS will become increasingly based on unpredictable and rapidly changing market forces rather than on more constant public service considerations. Governments of SIDS may face the difficult task of weighing the need to protect or subsidize their national airlines against the need to allow greater market access for competing airlines to achieve other national objectives such as the development of tourism. In addition, the airlines of SIDS will have difficult decisions to make on the extent to which they should cooperate with one another and with the major international airlines, bearing in mind that those airlines may also be their competitors.

55. For SIDS, the environmental problems of major significance are those associated with: (a) airport construction and expansion: loss of land and soil erosion; impact on water tables, river courses and drainage; and impact on flora and fauna; (b) airport operations: water pollution caused by inadequate treatment of contaminants in airport wastewater or by leakage from storage tanks; disposal of environmentally harmful materials used in aircraft servicing and maintenance; and disposal of waste from the airport and incoming aircraft.

B. Recommendations for action

At the national level

56. International standards: As required by the Convention on International Civil Aviation (art. 38), the many SIDS that have not responded to ICAO indicating their positions with regard to ICAO standards and recommended practices (contained in the annexes to the Convention) should indicate their compliance with or differences from those provisions.

57. Technology: Familiarize themselves with current technological developments of relevance to air transport, such as communications, navigation, surveillance/air traffic management (CNS/ATM) systems and the ICAO flight safety programme, with a view to ensuring active participation on an individual or subregional basis in global programmes related to these developments; seek guidance from ICAO in the formulation of projects, location of donors for the funding of such projects, and implementation of projects.

58. Human resources development: Introduce, wherever possible, human resources development programmes in such areas as air traffic control, airport management, aviation security, flight operations and airworthiness, air transport regulation and air law.

59. Information: Participate more actively in the ICAO statistics programme, which provides data on air transport that would be of value to SIDS in their future planning. To that end, ensure that their international airlines file with ICAO their traffic reports, cost statistics and financial statements, as required by the Convention on International Civil Aviation (art. 67).

At the regional level

60. Formulate regional projects for the evaluation and creation of air transport master plans for the following groupings of SIDS: Caribbean SIDS; Pacific SIDS; African SIDS off the west and east coasts, respectively. This recommendation excludes the other SIDS - Maldives, Bahrain, Cyprus, Malta and Singapore. It may be appropriate to include Maldives in the regional project for African SIDS off the east coast. These projects would cover all the action items identified in the Programme of Action and would seek to:

(a) International standards: Ensure compliance with international standards and recommended practices and implementation of measures related to the ICAO flight safety programme;

(b) Economics: (i) Address problems associated with distance and isolation (such as relatively high transport costs, including both fuel and insurance); (ii) study the impact on SIDS of commercial changes taking place in the air transport industry, including exploring the scope for greater cooperation (both commercial and technical) between airlines within the SIDS grouping concerned and with other international airlines; (iii) study the impact on SIDS of changes taking place in the economic regulation of air transport, including exploring the scope for more regional cooperation with regard to the regulatory aspects of air transport, such as joint negotiation of air transport agreements; and (iv) develop strategies for dealing with potential conflicts between SIDS air transport policies and their tourism policies;

(c) Capacity-building: Establish or improve programmes in aviation management skills and other suitable skilled occupational categories;

(d) Impact of technological changes: Examine the impact on SIDS of technological changes such as CNS/ATM systems and new developments in aeronautical meteorology, including the World Area Forecast System (WAFS) satellite broadcasts;

(e) Finance: Address difficulties experienced in obtaining funding for aviation projects;

(f) Communications: Improve the reliability of aviation communications facilities.

At the international level

61. Research: Sponsor studies, for example, by aircraft manufacturers, to investigate the feasibility of developing innovative energy-efficient and low-cost transport solutions that would be of benefit to SIDS.

VII. MARITIME TRANSPORT

A. Major additional findings

62. The maritime transportation issues are not uniform for all SIDS. The group is significantly diverse in geographic location, natural endowments and stages of economic development. Therefore, the problems of a country such as Singapore, with its excellent geographic location, the second largest container throughput in the world, are very different from those of most other SIDS. Estimates of total freight costs for SIDS are more than 45.5 per cent higher than developed market economies. Moreover, most small remote islands incur even higher freight costs as a percentage of import value.

63. The impact of open-registry fleets creates a statistical bias on the analysis of the fleet capabilities of the SIDS group. Open registries are legal mechanisms used to attract merchant tonnage from countries with more stringent safety regulations and higher operating costs to countries offering more flexibility and lower registration fees. The benefits for the open-registry countries are additional tax revenues and employment opportunities when ship management companies are established within the country. The main benefits, however, remain with the nationals of the owners because the share of tonnage owned by open-registry nationals is minimal. Within the SIDS group, open-registry tonnage represents 77.2 per cent of the total. Thus, a more accurate analysis of the SIDS fleets should focus on the remaining 30.6 million d.w.t.

64. The age of the SIDS fleets is another qualitative factor worthy of note. Seventy per cent of the merchant fleet is 15 years old and over. This ageing fleet leads to higher operating costs, as repair and maintenance rapidly increase with age, schedule delays and unreliability and greater environmental risks associated with obsolete vessels. In brief, the SIDS fleet is ageing and needs replacement.

65. SIDS need to increase their capabilities for serving their own trade. This is desirable because most of the fleet is owned abroad. While this provides foreign exchange earnings, employment for seafarers and diversification, it is not fully complementary to the trading requirements of SIDS because most manufactured goods move by container or general cargo ships. The former represent only 3.6 per cent and the latter 17.5 per cent of the SIDS fleet. If the vessels registered in Singapore and the two Caribbean countries extending open-registry facilities (Antigua and Barbuda and Saint Vincent and the Grenadines) are excluded from these two essential ship types (container ships and general cargo) the SIDS fleet is minimal.

66. Restructuring trends in the international liner shipping industry are also a factor affecting the transportation capabilities of many SIDS. Over the past decade, consolidation and cooperative commercial agreements between large container operators have resulted in a concentration of services. This has created economies of scale and encouraged the expansion of hub and spoke service patterns between major trading areas. For SIDS, however, the impact has been to increase the need for transshipment port services, acquiring vessels with container lifting capabilities, investing in electronic data interchange (EDI) technology and training management personnel. Without investments, particularly

in ships and port facilities, the ability of many SIDS to trade effectively and sustain development will be marginal.

67. In brief, SIDS are more than ever dependent on trade and efficient shipping services. Shipping services, however, continue to deteriorate because of inappropriate and ageing ships, ever-increasing concentration of liner shipping companies and the expansion of hub ports that require transshipment services.

B. Recommendations for action

At the national level

68. Investment incentives: (a) Promote investments in modern ships through fiscal policies that encourage investment, for example, rapid depreciation allowances, investment credits, and reducing personal income taxes for seafarers; (b) encourage the development of ship repair facilities through favourable fiscal policies and customs exemption for essential equipment and ship components; (c) support port infrastructure investments through direct loans or by guaranteeing loans from development agencies; (d) in the case of SIDS with very small island archipelagoes, consider the need for a licensing scheme and mail subsidies to private ship companies.

69. Institutional development: (a) Strengthen or encourage shippers' councils to act as focal points for the protection of shippers' interests; (b) participate actively in regional port management associations.

70. International legal instruments: Ratify United Nations conventions pertaining to the maritime sector (Convention on a Code of Conduct for Liner Conferences, United Nations Convention on Conditions for Registration of Ships, United Nations Convention on International Multimodal Transport of Goods, United Nations Convention on the Carriage of Goods by Sea, 1978 (Hamburg Rules), International Convention on Maritime Liens and Mortgages, 1993).

71. Human resources development: Upgrade maritime safety and environment administration by advanced training through the International Maritime Organization (IMO) and by sending government officials to specialized training and academic institutions such as the World Maritime University at Malmö.

72. Maritime safety: Gradually phase out existing over-age vessels and ban imports of ships exceeding 15 years old that cannot meet minimum IMO safety regulations.

73. Upgrade maritime safety and environmental protection procedures: Consider adopting and implementing the international instruments that form the basis of the Paris Memorandum of Understanding on Port State Control and applying the international instruments adopted by the Paris Memorandum of Understanding on Port State Control, including the International Convention on Load Lines, 1966; the Protocol of 1988 relating to the International Convention on Load Lines, 1966; the International Convention for the Safety of Life at Sea, 1974; the Protocols of 1978 and 1988 relating to the International Convention for the Safety of Life at Sea, 1974; the International Convention for the Prevention of

Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto; the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978; the Convention on the International Regulations for Preventing Collisions at Sea, 1972; and the Convention concerning Minimum Standards in Merchant Ships, 1976 (ILO Convention No. 147).

At the regional or subregional level

74. Expand the maritime capabilities of the region or subregion: (a) Accede to the Convention on a Code of Conduct for Liner Conferences; (b) form an intraregional liner freight conference; (c) prevent the importation of further obsolete ships into the region; (d) update and harmonize the maritime legislation of various SIDS at the subregional and national level with a view to providing a legal framework for more effective maritime transport; and (e) upgrade and strengthen the procedures for inspection of ships registered in the region.

75. Provide an improved intraregional sea transportation service: (a) Establish a ship finance division within the regional development banks in partnership with a foreign ship mortgage bank; (b) give berth preference to vessels carrying perishable foodstuffs; (c) give preferential berth treatment to regular traders; (d) improve ship-to-shore radio communications; (e) form small shipowners' regional associations.

76. Reduce overall sea transportation costs by improving shipping infrastructures: (a) Investigate and remedy port congestion, and critically examine future capital investments for major port development projects; (b) review and streamline customs and documentation procedures; (c) investigate and modernize port labour working practices.

77. Protect shippers' interests: (a) Establish shippers' councils at the regional level; (b) encourage the formation of open conferences for liner ships serving the regions; (c) encourage the shippers' councils and small shipowners' associations to use the services of a maritime transportation centre; (d) encourage shippers to negotiate favourable rates directly with shipowners for indirect services using existing North-North and North-South routes and ensure adequate services also for commodities with special transport needs; (e) promote slot charter agreements and transshipment services at required frequencies.

78. Promote cooperation among traders by: (a) Encouraging cooperation between traders to consolidate LCL (less than container load) shipments for economy and convenience and to negotiate better rates; (b) promoting the exchange of information and market intelligence between traders to identify opportunities for cooperation in obtaining shipping and other transport services, and developing databases for maintaining information on available shipping services, particularly relating to South-South opportunities; (c) encouraging traders, acting together, to discuss their South-South transport needs with local transport companies, ship operators and entrepreneurs interested in investing in shipping; (d) encouraging traders to enter into agreements on the minimum quantities required to be shipped, to justify the establishment or improvement of services.

79. Improve maritime managerial skills and knowledge in the region: (a) Establish a maritime transportation centre with two divisions: a maritime safety administration and an economic policy division; (b) provide subregional short training courses in shipping and port management through schemes such as the Trainmar programme of the United Nations Conference on Trade and Development (UNCTAD); (c) encourage the regional shipping lines to enter into joint ventures with foreign shipowners with a strong training component in the contract of agreement; (d) undertake a manpower study to assess the training needs of the region and supplement regional training capabilities, as appropriate; (e) establish a system for the examination and issuance of certificates of competency.

Notes

1/ Report of the Global Conference on the Sustainable Development of Small Island Developing States, Bridgetown, 25 April-6 May 1994 (A/CONF.167/9 and Corr.1 and 2) (United Nations publication, Sales No. E.94.I.18 and corrigenda), chap. I, resolution 1, annex II.

2/ The report of the Secretary-General on the protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their living resources (E/CN.17/1996/3) uses the Agenda 21 terminology "coastal area". The same terminology is used here for the sake of consistency and to avoid confusion. The terminology used in the Programme of Action is "coastal zone". Issues related to the exclusive economic zones of small island developing States are not dealt with here. Those issues are dealt with in the report of the Secretary-General on the protection of the oceans, all kinds of seas ... (E/CN.17/1996/3).

UNITED
NATIONS

E

Economic and Social Council

Distr.
GENERAL

E/CN.17/1996/20/Add.1
29 February 1996

ORIGINAL: ENGLISH

COMMISSION ON SUSTAINABLE DEVELOPMENT
Fourth session
18 April-3 May 1996

PROGRESS IN THE IMPLEMENTATION OF THE PROGRAMME OF ACTION FOR THE SUSTAINABLE DEVELOPMENT OF SMALL ISLAND DEVELOPING STATES

Report of the Secretary-General

Addendum

Management of natural and environmental disasters in small island developing States

CONTENTS

		Paragraphs	Page
INTRODUCTION		1 - 6	2
	A. Background	1 - 2	2
	B. Perspective	3 - 6	2
I.	OVERVIEW OF ACTIVITIES AND POLICY ISSUES	7 - 45	3
	A. Vulnerability of small island developing States	7 - 10	4
	B. Current state of progress in disaster reduction	11 - 27	4
	C. Main policy issues	28 - 45	8
II.	CONCLUSIONS AND RECOMMENDATIONS	46 - 58	13
	A. Conclusions	46 - 53	13
	B. Recommendations and priorities for action	54 - 58	15

96-04776 (E) 150396 250396

INTRODUCTION

A. Background

1. The present document reports on progress in the implementation of relevant recommendations of Agenda 21 as well as of the Programme of Action for the Sustainable Development of Small Island Developing States with regard to reducing the impact of natural and environmental disasters on the populations and the economies of small island developing States. The report is the result of coordinated input from concerned entities within the United Nations system and the international community. It provides a brief updated assessment of the current state of implementation of the Programme of Action, identifies the main relevant policy issues and makes a number of recommendations and proposals for actions.

2. The document has been prepared within the context of the International Decade for Natural Disaster Reduction (1990-2000), and in line with the guiding principles on the strengthening of the coordination of humanitarian emergency assistance of the United Nations, as adopted by the General Assembly. 1/ The secretariat for the Decade is an integral part of the Department of Humanitarian Affairs of the United Nations Secretariat, which serves as task manager for the issue of natural and environmental disasters. The report, accordingly, takes account of progress made in implementing the outcome of the World Conference on Natural Disaster Reduction, 2/ held at Yokohama, Japan, from 23 to 27 May 1994, with particular reference to those aspects that are of concern to the small island developing States. Thus, it provides a further stage in the broader-based evaluation of synergy between the future implementation of Agenda 21 and the Yokohama Strategy and Plan of Action, in support of the international community's efforts to achieve sustainable development.

B. Perspective

3. In 1994, the Global Conference on the Sustainable Development of Small Island Developing States adopted the Programme of Action for the Sustainable Development of Small Island Developing States. 3/ The Declaration of Barbados affirms that small island developing States are particularly vulnerable to natural and environmental disasters and have limited capacity to respond to and recover from such disasters. 4/ Chapter 2 of the Programme of Action outlines a set of actions to enable small island developing States to counter the threat from natural and environmental disasters.

4. Also in 1994, the World Conference on Natural Disaster Reduction was held at Yokohama, Japan, in the context of the International Decade for Natural Disaster Reduction. The Conference provided input for the Decade's mid-term review and adopted the Yokohama Strategy and Plan of Action as a guideline for implementation during the second half of the Decade, and as a basis for a comprehensive natural disaster reduction strategy into the twenty-first century. Both the outcome of the World Conference and the action plan for its implementation have been endorsed by the General Assembly.

5. The Yokohama Strategy and Plan of Action 5/ is built around the Decade's overall objective of reducing through concerted international action, especially in developing countries, the loss of life, property damage and social and economic disruption caused by natural disasters. It recognizes that, in many countries, sustainable economic growth and sustainable development cannot be achieved without adequate measures to reduce disaster losses, and that there are close linkages between disaster losses and environmental degradation, as emphasized in Agenda 21. It emphasizes the need for the United Nations system to pay special attention to the needs of small island developing States in this regard.

6. In the Declaration on the Occasion of the Fiftieth Anniversary of the United Nations, the General Assembly, inter alia, placed natural disaster reduction within the perspective of the international community's commitments on development cooperation for the benefit of fostering sustained economic growth, social development, environmental protection and social justice. 6/ The Ad Hoc Open-ended Working Group of the General Assembly on an Agenda for Development has defined a need for disaster reduction to become an integral part of national strategies and programmes for sustainable development. It calls for the implementation of the Yokohama Strategy and Plan of Action and points to the need for adequate financial resources and transfer of technology for developing countries.

I. OVERVIEW OF ACTIVITIES AND POLICY ISSUES

A. Vulnerability of small island developing States

7. The small island States of the Caribbean and Pacific regions and elsewhere are highly prone to devastating natural disasters, owing to (a) their small geographical areas, which account for the fact that disasters take country-wide proportions; (b) their location in some of the highest risk areas of the planet, such as mid-ocean ridges with strong volcanic and seismic activity, tropical cyclone belts, and direct exposure to the forces of the oceans; and (c) the fact that they are often dependent on single or few sources of income, in the agricultural sector or in tourism, for a substantial part of their gross national product (GNP). The economy of some even relies on one single crop. These sources of income can sometimes be severely reduced for months or years by a single catastrophic event. The adverse effects of disasters of major magnitude for small island States' economies, if recurrent, are even greater.

8. Another critical factor in this vulnerability, in particular in the least developed small island States, is their limited capacity to reactivate the development process. The fragility of their ecosystems and their limited human resources often preclude any possibility of developing and implementing meaningful disaster-mitigation programmes and the substantive vulnerability studies called for in this respect.

9. According to a study carried out by the Office of the United Nations Disaster Relief Coordinator (UNDRO) in January 1990, which ranked countries on the basis of the impact of disasters on their GNP, 13 of the 25 most disaster-prone countries are small island States. Some lost, in certain years,

between 28 and 1,200 per cent of their GNP. Vanuatu has lost as much as 57.7 per cent of its GNP, on average, in the four years 1981, 1985, 1987 and 1989 when it was hit by cyclones, and has incurred an overall estimated loss of more than two years of GNP as a consequence of significant disasters between 1970 and 1990. Such massive impacts can result in negative development for the countries concerned, i.e., steps backwards in terms of relative development. While over the long term they may still reach a modest economic growth rate, there is no doubt that disaster mitigation would allow these countries to sustain much higher rates of development through the effective reduction of their vulnerability to natural disasters.

10. Equally, environmental hazards can have serious impact on small island States. In particular the pollution of marine living resources, both from land-based sources and from transit shipping, is an area of concern. Reference is made to the report of the Secretary-General on the protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their living resources (E/CN.17/1996/3) for a more detailed analysis of this aspect. Sealevel rise as a consequence of global warming is considered by most small island States as the major long-term environmental risk to which they are exposed. Climate change is perceived by many as having an influence on the frequency and intensity of extreme meteorological and hydrological events, although research in this field is still continuing.

B. Current state of progress in disaster reduction

11. Induced both by the Barbados Programme of Action and the Yokohama Strategy and Plan of Action, and based on existing programmes and activities, significant progress has been achieved in disaster management, in particular with regard to natural disaster reduction, in the small island States in the Caribbean and South Pacific subregions. They relate primarily to strengthening and building institutional disaster-management capacities at the national and local levels, as well as to the promotion of respective regional and subregional frameworks for cooperation, and the coordination of their activities at the regional and sub-regional levels.

12. The small island countries of the Pacific region have been very active in the area of developing their disaster-management capabilities with the support of the South Pacific Disaster Reduction Programme (SPDRP). The project is funded by the United Nations Development Programme (UNDP) and eight bilateral donors and implemented by the South Pacific Programme Office of the Department of Humanitarian Affairs. Its aim is to strengthen institutional capabilities and develop human resources in order to reduce the impact of natural disasters and thus reduce the constraint to sustainable development. It provides a framework for regional cooperation and exchange and extensive in-country and regional support in a range of disaster-management aspects, including disaster mitigation, preparedness and emergency and relief management. Two regional meetings on disaster reduction were held within the framework of the project since its start in May 1994.

13. Under the framework of the World Meteorological Organization (WMO) World Weather Watch Programme, the Nadi Tropical Cyclone Warning Centre in Fiji has been designated as a fifth Regional Specialized Meteorological Centre (RSMC), with activity specialization in tropical cyclone analysis, tracking and forecasting, since June 1995. The Nadi RSMC has responsibility for providing advisory services on tropical cyclone detection, monitoring and forecasting to the national meteorological services of the South Pacific and several initiatives have been taken to improve its facilities and services. These activities are expected to improve the forecasting and early-warning capabilities in the South Pacific region substantially before the end of the decade. Other RSMCs with similar specialization, whose areas of responsibility are shown in parentheses, are located in Réunion (south-west Indian Ocean), Miami (Caribbean Sea, north Atlantic Ocean, Gulf of Mexico), Tokyo (north-west Pacific Ocean), and New Delhi (north Indian Ocean, Arabian Sea and Bay of Bengal). They provide services to national meteorological services, in particular of small island States, in their regions of responsibility.

14. A third area in which significant progress is being made is telecommunications. The commissioning of a new satellite for regional telecommunications through the PEACESAT programme and the establishment of a sustainable development network provide opportunities for Pacific island countries to improve their pre- and post-disaster information exchange.

15. Progress is less evident in the integration of disaster policies into national development planning because this is a long-term development that can only be implemented in a gradual way. The establishment of national emergency funds has not been a priority in Pacific island countries. Although some countries have emergency reserves, these are, in general, small compared to the funding requirements in case of a disaster. Greater emphasis is placed on emergency procedures for disbursement, and countries continue to rely on external support for disaster relief, in particular from the United Nations and neighbouring countries.

16. As to environmental disasters in the Pacific, the International Maritime Organization (IMO) is working on maritime safety, including the development of pollution-combating centres, direct assistance in the event of serious spills, as well as continued efforts to establish regional maritime coordination networks.

17. In September 1995, at the twenty-sixth South Pacific Forum in Papua New Guinea, the Waigani Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region, was signed by all Forum members except Tuvalu and the Marshall Islands. The signing of the Waigani Convention is an indication of the seriousness with which countries are now treating the problems posed by hazardous and radioactive wastes. The South Pacific Regional Environment Programme (SPREP) acts as the secretariat for the Convention.

18. The small island countries of the Caribbean region have experienced several major natural disasters since April 1994: tropical storm Debby passed through Saint Lucia (September 1994), tropical storm Gordon ran through Haiti and Cuba

(November 1994), hurricanes Luis and Marilyn hit Antigua and Barbuda, Dominica, Saint Kitts and Nevis and the Netherlands Antilles (September 1995), and Montserrat is still under continuous threat of volcanic eruption. The Caribbean Disaster Emergency Response Agency (CDERA) coordinates disaster relief in the Caribbean region. For the purpose of improving disaster preparedness, it has established arrangements for regional cooperation for support to countries affected by disasters. The Department of Humanitarian Affairs of the Secretariat has organized a training seminar for stand-by emergency teams.

19. Many of the Caribbean small island States are currently undertaking disaster-reduction activities in a number of sectors. Priority attention is given to tourism, health, education, infrastructure and agriculture. These activities are supported by the Caribbean Disaster Mitigation Project (CDMP), implemented by the Organization of American States (OAS), with funding by the United States Agency for International Development (USAID). Emphasis is placed on regional disaster-mitigation activities and exchange programmes.

20. Insurance against disasters is an important issue in the Caribbean region. Several initiatives are being taken to address the need for appropriate availability of insurance. The Caribbean Disaster Mitigation Project attempts to improve cooperation between national disaster-management agencies and insurance companies. WMO and the Economic Commission for Latin America and the Caribbean (ECLAC) organized a Workshop on Meterological and Hydrological Data for the Insurance Industry at Port-of-Spain on 26 and 27 October 1995, during which innovative measures on insurance were discussed, and the Food and Agriculture Organization of the United Nations (FAO) provided advice on the basic requirements for agricultural insurance for weather damage.

21. As to environmental threats, the Organization of Eastern Caribbean States, based in Saint Lucia, manages a project on pesticides and toxic chemicals legislation, which seeks to educate the public on the use of chemicals, train pesticide users and institute controls on storage and transportation. The United Nations Environment Programme (UNEP)/Department of Humanitarian Assistance Environment Unit is developing a network of national focal points so that notification of environmental emergencies and request for assistance can be made as efficiently as possible, thereby strengthening the international capacity to provide support for countries requiring help. The network includes Antigua and Barbuda, Barbados, Bahamas, Haiti, Saint Lucia and Trinidad and Tobago.

22. WMO organized an Expert Meeting on Public Weather Services and Hurricane Disaster Preparedness at Port-of-Spain from 11 to 15 December 1995. The main focus of the meeting was to review the current methodology used to make seasonal and inter-annual predictions of hurricane activity, and the level of skill of such forecasts. The meeting concluded that seasonal forecasts already had some skill regarding hurricane activity in the Caribbean and it was expected that the skill level would continue to improve with further research. The use of seasonal forecasts must be put in perspective of decadal scale trends, which currently indicate a lull in hurricane activity in the Caribbean Basin compared to decades prior to 1960. The meeting also addressed the important issue of public education and understanding in dealing with all information concerning hurricane-related disasters.

23. A study relevant to the efforts undertaken during the International Decade for Natural Disaster Reduction, to reduce the adverse impacts of natural disasters, namely, the design and implementation of the building code CUBiC (Caribbean Uniform Building Code), was presented at the meeting. The project was developed some nine years ago in Trinidad and Tobago and it is envisaged that its implementation should result in safe and economic design structures. The Miami RSMC offered to include CUBiC on its Home Page on the Internet.

24. New initiatives for disaster reduction in small island States outside the Caribbean and Pacific regions have been less comprehensive. A series of three African subregional workshops on natural disaster reduction was carried out during 1994-1995. These workshops have initiated the formulation of country programmes. Other activities reported include a WMO seminar and training course for the Indian Ocean and a regional workshop sponsored by the UNDP/Department of Humanitarian Affairs Disaster Management Training Programme, which is planned for 1996, with the participation of Mauritius, Seychelles, Reúnion, Comoros and Madagascar. The Department of Humanitarian Affairs provided technical support in disaster mitigation to Cape Verde.

25. A wide range of other international programmes and projects contribute to disaster reduction in small island States. A framework for these activities is provided by the International Decade for Natural Disaster Reduction, and many of the small island States are active participants in Decade activities. They organize national activities for the annual International Day for Natural Disaster Reduction (the third Wednesday in October), contribute to the overall development of programmes and policies within the International Framework of Action for the Decade, and use the Decade resources and materials to strengthen in-country public awareness and education activities.

26. In the context of the major programmatic areas of international cooperation in support of disaster reduction in small island States, activities are undertaken, with the wide participation of the United Nations system, in the fields of information management and communication, hazard forecasting and warning, and technical cooperation. Several bodies and organizations of the United Nations system, including the Department of Humanitarian Affairs, WMO, the World Health Organization, the United Nations Children's Fund, the United Nations Educational, Scientific and Cultural Organization and the United Nations Centre for Human Settlements (Habitat), report on programmes that support disaster reduction in small island States.

27. With regard to more detailed information, reference is made to the report of the Secretary-General report on action taken by the organs, organizations and bodies of the United Nations system to implement the Programme of Action for the Sustainable Development of Small Island Developing States (A/50/422). Reference is also made to the reports of the Secretary-General, both on the International Decade for Natural Disaster Reduction (A/50/201-E/1995/74), in general, and on early-warning capacities of the United Nations system with regard to natural disasters (A/50/526), which were submitted to the General Assembly at its fiftieth session. A complementary publication of the secretariat of the Decade provides a summary of global and regional activities since the World Conference on Natural Disaster Reduction.

C. Main policy issues

1. Regional cooperation

28. Regional cooperation is a vital factor for success in addressing the natural disaster problems of small island States. The regional level performs a support role by providing a framework that enhances the national capabilities to reduce disasters. Regional cooperation enables a continuous dialogue on risk analysis and vulnerability assessment, as well as the identification of common interests and requirements of countries, the regional exchange of knowledge and traditional indigenous technologies, joint approaches to education, training and awareness-raising, and the development of common approaches, where appropriate, with regard to international technical cooperation. Regional as well as sub-regional cooperation arrangements are traditionally strong in addressing issues of common concern, in particular in the Caribbean and Pacific regions. During recent years, for example, programmes based on such mechanisms have provided substantive support to disaster reduction.

29. The small island States outside those subregions have been generally less successful in realizing concrete progress in disaster reduction. This may in part be attributable to a lack of comparative mechanisms of cooperation between those small island States, even though they face similar problems and opportunities for disaster reduction. Interregional cooperation could be beneficial for all these small island States, and could, in particular, assist countries that have relatively less strong regional ties.

2. Policy support at the national level

30. A fundamental precondition for successful disaster reduction is its full integration into national planning. The effectiveness of applying necessary measures at all levels of society and administration is proportionate to the degree of political recognition and support for disaster reduction at the highest level. In this way, stronger policy support can be generated for key decision makers within all the relevant sectors. Three areas of policy making at the national level for reducing disaster impacts in small island States stand out from the rest:

(a) Institutional development and human resources development;

(b) The implementation of disaster-mitigation projects that contribute to the integration of natural and environmental disaster policies into national development planning;

(c) The improvement of systems and arrangements for information management and communication.

31. Other priority areas, according to local circumstances, include the strengthening of local broadcasting arrangements, the establishment of national emergency funds and the use of traditional knowledge and approaches for disaster reduction and preparedness.

3. Vulnerability index of small island States

32. Vulnerability to natural disasters is one of the most important factors to be considered in analysing the overall risk of small island States and in determining their potential for development. This requires the development of reliable vulnerability indices, comprising a sound assessment of hazards and risk, as well as ecological, economic and social data. A vulnerability index of small island States would provide the basis for establishing integrated frameworks for all aspects of disaster management, in particular natural disaster reduction, as part of national planning. One such building block for an integrated approach of this kind is already being developed, inter alia, by means of a comprehensive and coordinated project strategy in the context of the Decade, whereby possible methodologies for reliable data collection and analysis are being considered.

4. Insurance

33. The issue of insurance is closely related to assessments and perceptions of the overall vulnerability of small island States, and the devastating impact that disasters often have on development as a whole. In the Caribbean, access to insurance had been reduced during recent years as a result of a sequence of major natural disasters. Following the Barbados Conference, however, several initiatives are in process to improve access to insurance and stimulate cooperation between insurers, with a view to providing suitable solutions for small island States. More research and experiments are needed to optimize the contribution insurance can make to reducing the impact of disasters as well as to diminishing the impact of perceived and real disaster risks on the overall development potential and level of investment in small island States. Among the topics to be considered in that process are:

(a) The use of building codes and engineering certificates in insurance;

(b) Proper land use based on multiple risk analysis and detailed risk maps;

(c) The impact of hazard mapping and long-term weather forecasts on access to insurance, and on premium structures;

(d) Opportunities for sectoral insurance, in particular in agriculture and tourism;

(e) The establishment of mutual insurance between small island States as a means of spreading developmental risks between countries;

(f) Insurance compensations in the informal and subsistence sectors of the economy;

(g) The use of other financial instruments such as mortgage policies and housing loans and subsidies, in conjunction with insurance, for disaster-prevention purposes.

34. The interdependence between the coverage of risk through direct insurance and through reinsurance, as well as the issue of developing appropriate national insurance programmes, which, as part of a market of increasingly global dimension, depend on distinct recognition and support from the international reinsurance sector, is also an important factor. Concerns about global warming and its potential impact in terms of natural disasters have led to an increasing awareness on the part of insurance and reinsurance companies of the need to go beyond traditional insurance schemes and to promote disaster-mitigation measures at all levels in order to reduce the rapidly increasing volume of insurance claims in the years to come. (This has been evidenced, recently, by a "Statement of Environmental Commitment" signed by a number of insurers under the auspices of UNEP.)

5. National emergency funds

35. Irrespective of improved access to insurance and related private sector mechanisms, and in addition to the institution of direct transfers from national Governments for disaster relief and rehabilitation, there will remain a distinct need for contingency resources that enable adequate support to disaster victims. Recent experience in the Caribbean indicates that the lack of national emergency funds, and of effective procedures for emergency disbursement, slows down the capacity of competent national administrations to provide adequate emergency assistance in an appropriate time. This is of particular importance in the case of disasters of a magnitude requiring international assistance, so as to form a bridge between the launching of an appeal and the receipt of external relief. This also applies to disaster situations that are limited to the local level but that nevertheless need to draw on national resources for adequate response action. In addition to supporting relief activities in acute emergency situations, national emergency funds can also form part of an overall national disaster-management strategy, embracing prevention, early warning and preparedness, as well as disaster relief and rehabilitation.

6. Environment, disasters and development

36. The Programme of Action for the Sustainable Development of Small Island Developing States provides an integrated framework for addressing natural disasters in the context of environmental fragility and social and economic development. By considering disaster risks as a cross-sectoral issue in the development of small island States, disaster management can be recognized as extending beyond emergency relief and disaster response. This approach was also emphasized during the World Conference on Natural Disaster Reduction, in May 1994, where this comprehensive approach was referred to as "building a culture of prevention".

37. Experience gained from the implementation of current policies and programmes indicates that disaster management needs to be defined and applied in a more integrated way and that such an approach would be particularly appropriate for small island developing States. Natural disaster reduction as an integral part of the concerted efforts of the international community towards sound environmental management, the protection of natural resources and the

achievement of sustainable development will be a long-term process, extending well into the next century. The development of a vulnerability index for small island States, and the establishment of various pilot programmes to integrate disaster considerations into overall development strategies, indicate that small island States can take a leading role in developing disaster-management approaches appropriate to this new role.

7. Socio-economic impact assessment

38. The far-reaching effects of natural disasters on the economies of the affected countries need to be addressed in a much more systematic way than hitherto. As already indicated, it is recognized, for example, that in many disaster-prone developing countries, natural disasters account for the loss of several percentage points of GNP, which for many of them is often tantamount to negative development. However, no systematic data collection on the true impact (direct, indirect and secondary damage) of natural disasters has ever taken place; yet, this is fundamental for enlightened national development policy making.

39. Within the framework of the International Decade for Natural Disaster Reduction, a world survey of disaster damage in the first half of the Decade is being initiated. It is expected to yield not only reliable quantitative data on which disaster-prone countries could base their policy decisions, but also a methodology for future disaster damage assessment and cost-benefit analyses of mitigation or prevention measures. This and other efforts, including practical studies on the use of financial instruments like mortgage policies, housing and business development loans and grants, as well as insurance for disaster-mitigation purposes, are aimed at facilitating the integration of natural disaster variables in national development plans, with a view to enhancing sustainable development, particularly in the least developed disaster-prone countries and in small island developing States.

8. Human resources development

40. Natural and environmental disasters probably present the biggest ongoing systematic threat to achieving development goals in small island developing States. Consequently, there is a need for a comprehensive approach to disaster reduction as a universal focus rather than an approach that concentrates largely on high profile current events. Because disasters are endemic to many of the countries, programmes of disaster reduction can be looked upon as protecting the process of development. The capacity and resources held by populations to minimize their risk and vulnerability to such disasters are essential factors for the effective integration of disaster reduction into development programmes and strategies. Optimum use of human resources is also essential to operate within the limits of, often scarce, available means.

41. Education in all its aspects, as well as scientific and vocational training, and awareness raising, both in general and in hazard-specific terms, are key to capacity-building and human resources development. Several programmes are being undertaken by a number of small island States at the

regional, subregional and national levels. Interregional cooperation between small island States could further enhance the opportunities for learning lessons from capacity-building programmes in other such countries. The Scientific and Technical Committee of the Decade is initiating a strategy for improved natural disaster reduction training as part of implementing the Yokohama Strategy and Plan of Action.

9. Technological development in disaster reduction

42. The major trend in disaster management is towards a more integrated and proactive approach. This trend is firmly based on the international policies established in Barbados and Yokohama. New developments in technology for disaster reduction relate to an important extent to increased opportunities for collecting, processing, analysing and sharing extensive amounts of data. Development trends can be better analysed and integrated with information on hazards and vulnerability. Technological advances in the use of materials is providing new ideas for the application of updated or modified traditional and local practices, such as improved construction techniques applied to indigenous materials. Advanced biological practices are encouraging the more varied or extended use of natural resources to limit the depredation of local environments from natural hazards. Modified strains of crops can also increase their durability or resistance to hazard agents. The increased use of recycling technologies is able to provide a greater conservation of resources and to retard their disastrous overuse or depletion.

43. Disaster-management and emergency operations can be based on more detailed information that is available to a wider range of people internationally, leading to more focused support programmes. Technological advances in communication and educational practices present significant opportunities for smaller habitations or scattered population groupings in small island States.

10. Early warning

44. The effective early warning of natural hazards and the integration of community awareness pertaining to disaster-management capabilities are viewed as essential components in the protection of community resources. It is widely recognized that political and social commitment to the development of community-based disaster-awareness programmes, and the encouragement of informed participation in developing local capacities to protect social and economic assets, contribute to the realization of developmental accomplishments. The General Assembly has recognized this importance, with particular reference to developing countries and small island States, in its endorsement of the review and analysis of early-warning concepts and practices which can provide proposals for the improvement of both international coordination and local capacity-building in disaster reduction. The General Assembly has also encouraged all countries subjected to the severe effects of natural hazards, such as small island States, to actively undertake regular reviews of their early-warning requirements and capabilities at the national and local levels, with the full support of the United Nations system. 7/ For greatest effectiveness and the most efficient use of limited resources, this needs to be done within the

framework of their overall national development objectives for the protection of their populations and assets.

11. Participatory approaches

45. The ultimate success of any disaster-reduction activity is overwhelmingly determined at the community and local levels by the extent to which lives are being saved and property and infrastructural investment is being protected. This calls for the active participation of populations and societies directly at risk from natural or environmental hazards. In most of the small island States, the local communities implement, for example, land-use policies. While advocacy for disaster reduction and the promotion of national development in this field, as well as the commitment for international technical cooperation and the adequate provision of such resources, are to a large extent major responsibilities of the United Nations system and its Member States, the concrete transformation of such commitment into practical achievements requires the full participation of all concerned sectors. This requires the active involvement of local authorities, indigenous and international non-governmental organizations, the scientific and technical communities, the private sector, including financial institutions, insurance, service providers and industry, as well as the media. Such a participatory concept is a key objective of the Decade, as reaffirmed by the Yokohama Strategy and Plan of Action.

II. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

46. As a result, inter alia, of the Declaration of Barbados and the Programme of Action for the Sustainable Development of Small Island Developing States, and in the context of the implementation of both Agenda 21 and the Yokohama Strategy and Plan of Action, progress has been made in better addressing the disaster problems of small island States, in particular in the Pacific and Caribbean regions. However, it needs to be recognized that many new activities that have been defined and presented in this process are yet to be implemented in concrete terms. Most of the activities currently supporting disaster reduction in small island States were already in advanced stages of planning at the time of both Conferences.

47. Some countries continue to express concern that, in the follow-up to the Global Conference on the Sustainable Development of Small Island Developing States, additional resources have only come forward to a very limited and still insufficient extent. Also, the call for additional support for natural disaster reduction, as reiterated during the World Conference on Natural Disaster Reduction, and as endorsed by the General Assembly, 8/ has yet to be translated into the provision of adequate resources. The present chapter, therefore, outlines some key requirements for effective and continued implementation of chapter 2 of the Programme of Action for the Sustainable Development of Small Island Developing States.

1. National programmes for disaster reduction

48. Institutional development, mitigation programmes, information access and exchange, as well as education and training, are recognized as priority areas for natural disaster reduction programmes. These priority areas need to be addressed through coherent national programmes as outlined in the targets of the International Decade for Natural Disaster Reduction. Not all small island States have yet been able to establish these programmes. This, together with the generation of the necessary policy support for disaster reduction activities, is a particular priority need. Adequate external support for national programme development is equally essential to build capacities at the regional, subregional, and national levels.

2. Subregional, regional and interregional cooperation of small island States

49. The findings in the present report demonstrate that subregional and regional cooperation between disaster-prone small island States has played a positive role in generating progress in countering and reducing the effects of natural and environmental disasters in the Caribbean and in the South Pacific. It is also concluded from these experiences that cooperation between small island States on an interregional basis will enhance these possibilities even further. Interregional cooperation would, in particular, allow small island countries outside the Pacific and Caribbean regions, which to date depend mostly on their own limited capabilities and international bilateral or multilateral support, to increase their interaction with other small island States and to draw on the potential of a South-South transfer of knowledge and technology.

50. Major opportunities for strengthening or developing means of subregional, regional and interregional cooperation lie in establishing an interregional mechanism for training in disaster reduction, in particular by facilitating networking between existing institutes and programmes and by establishing scientific or technical exchange programmes. This could lead to broadening the possibilities for the development and implementation of joint disaster-mitigation activities.

3. Development of new subprogrammes

51. The disaster-reduction programmes implemented in the Pacific and Caribbean regions should provide a basis for the full and successful implementation of chapter 2 of the Programme of Action for the Sustainable Development of Small Island Developing States, if they can be sustained over the longer term. Still, there remains the need to consider additional subprogrammes: (a) in support of the small island States outside both regions; (b) with regard to further developing the understanding of the specific vulnerabilities and opportunities of small island States; and (c) for the purpose of establishing mechanisms for cooperation and exchange, as indicated above. In addition, targeted research and further development of knowledge is needed in a number of thematic areas for building risk-reduction capacities in small island States.

4. Interdependencies and linkages

52. As outlined in the introduction to the present report, measures of disaster prevention, preparedness and mitigation are an integral part of national planning. Natural disaster reduction contributes, as a cross-cutting issue, to poverty alleviation through sound environmental management, the protection of natural resources and the achievement of sustainable development. The implementation of Agenda 21, the pursuit of concrete progress with regard to the Programme of Action for the Sustainable Development of Small Island Developing States and the efforts to attain the goals and objectives of the International Decade for Natural Disaster Reduction (1990-2000) must go hand in hand. Thus, the closest coordination with the action plans of all recent thematic global conferences, organized under the auspices of the United Nations, is required, in particular with regard to those components of particular relevance for small island developing States.

53. The full recognition of the interdependence and the linkages between natural disaster reduction and the achievement of sustainable development is a decisive prerequisite for all progress both at the policy level and at the operational level. In this context, any notion that disaster management is limited to action in specific disaster situations, and by specialist sectors of society only, is detrimental to the objective of saving lives and protecting property at risk from natural and environmental disasters. Equally, there is a need to avoid the erroneous perception among some decision makers and the public that disasters are, by definition, synonymous with man-made or politically induced emergency situations. Natural and environmental hazards constitute a major threat to both developing and industrialized countries; natural and environmental disasters kill and maim people and can heavily disrupt the long-term economic and social stability of societies. Concepts and measures to counter this threat deserve the highest possible attention.

B. Recommendations and priorities for action

1. Recommendations

54. In considering the findings of the present report, and in recognition of the continuing need for the full and effective implementation of chapter 2 of the Programme of Action for the Sustainable Development of Small Island Developing States, it is recommended that the Commission on Sustainable Development:

(a) Encourage the Governments of small island developing States, with the active involvement of local authorities, indigenous and international non-governmental organizations, the scientific and technical communities, the private sector, including financial institutions, insurance, service providers and industry, as well as the media, to integrate fully programmes and measures related to natural and environmental disaster reduction into their national development plans, policies and projects for sound environmental management, the protection of natural resources and the achievement of sustainable development;

(b) Also encourage the Governments of small island developing States to increase further their efforts towards subregional, regional and interregional cooperation;

(c) Call on all Governments, with the active involvement of all concerned sectors of society, to consider the issue of natural and environmental disaster reduction as fully integrated into the international community's efforts towards sound environmental management, the protection of natural resources and the achievement of sustainable development, and to support the facilitation of an effective synergy between the implementation of Agenda 21, the Barbados Programme of Action and the Yokohama Strategy and Plan of Action;

(d) Call on Member States to support the efforts undertaken within the context of the Decade, towards improving the early-warning capacities for natural disasters and similar disasters with an adverse effect on the environment, including the establishment of effective global and regional mechanisms for the collection, analysis and dissemination of reliable disaster-reduction data, and the transfer of early-warning related technology within international technical cooperation;

(e) Support the implementation of the Yokohama Strategy and Plan of Action with particular regard to improved education and training in disaster reduction, including the creation of interdisciplinary scientific and technical networking at all levels, for the purpose of capacity-building and human resources development;

(f) Invite Governments to consider establishing an informal open-ended working group within the existing International Framework of Action for the Decade, 9/ with membership from concerned small island developing States, as well as of all relevant sectors in disaster reduction, with a view to ensuring the full integration and participation of small island developing States in the mapping of a concerted strategy for disaster reduction into the twenty-first century. 10/

2. Priorities for action

55. The Commission is further invited to consider a number of priority actions, which are set out in the following paragraphs in relation to the national, regional and international levels.

(a) National level

56. At the national level, activities should be undertaken within the framework of coherent national programmes, as outlined in the targets of the International Decade for Natural Disaster Reduction. Not all small island States have yet been able to develop such programmes. This remains, thus, in itself an area of priority, for which adequate external support is essential. The activities should comprise:

(a) Integration of natural and environmental disaster policies into national development planning;

(b) Institutional development, including early-warning systems and human resources development for disaster management;

(c) Improvement of systems and arrangements for information and communication;

(d) Strengthening of local broadcasting;

(e) Establishment of national emergency funds to provide adequate support to disaster victims;

(f) Use of traditional systems for disaster reduction and preparedness;

(g) Development of appropriate national insurance programmes.

(b) Regional level

57. At the regional level particular emphasis should be placed on activities that would assist more isolated small island developing States to increase cooperation with others. In addition, consolidation and further strengthening of regional cooperation mechanisms in the Pacific and the Caribbean are required. The following actions are recommended:

(a) Strengthening of regional and interregional cooperation between small island States in disaster reduction, including through exchange programmes, joint disaster-reduction programmes and other mechanisms;

(b) Formalization and strengthening of cooperation arrangements at the regional level through the designation of a regional policy body for disaster reduction;

(c) Development of operational working arrangements for disaster mitigation, preparedness and response, and consolidation of existing disaster-reduction programmes;

(d) Establishment of an interregional mechanism for training in disaster reduction, in particular by facilitating liaison between existing institutes and programmes;

(e) Assessment of the needs in each region on the basis of a detailed analysis of the regional situation and an analysis of requirements at the national level, as indicated above.

(c) International level

58. Both the Yokohama Conference and the Barbados Conference call for the mobilization of additional resources for disaster reduction in small island States. It is not clear to what extent those Conferences have already been instrumental in mobilizing resources, yet the perception in some small island developing States is that more can and should be done. A second subject area that plays a central role for international-level action is access to technology, training and information. The following could be considered by the

Commission as priorities for international action in addressing disaster problems of small island developing States:

(a) Provision of expert support for the establishment of national programmes for disaster reduction in small island States in the context of their national strategies;

(b) Mobilization of additional resources to address urgent disaster-reduction requirements and to build early-warning capacities for natural disasters in small island States;

(c) Improved access to disaster and warning information in order to enhance the capability of small island States for disaster management;

(d) Provision of technical, financial and expert support for the establishment of a mechanism for interregional cooperation and exchange of small island States in disaster reduction, in particular in training, institutional development and disaster-mitigation programming;

(e) Establishment of a specific international programme for disaster reduction in small island States to provide a framework for cooperation and exchange of knowledge and technology;

(f) Support for targeted research and further development of knowledge in the following thematic areas for building risk-reduction capacities in small island States:

(i) Insurance as a preventive and mitigating tool for disaster reduction;

(ii) Telecommunications and information management as a tool for disaster reduction;

(iii) Limits and opportunities for the establishment of national disaster emergency funds and emergency administrative procedures;

(iv) A systematic analysis of developmental vulnerability and the establishment of indices and indicators;

(v) Evaluation of constraints in small island States' access to reliable data, disaster-specific knowledge and technology means;

(vi) A review of the linkages between disasters, development and environment, including the development of methods for systematic appraisal of developments in relation to disaster risks;

(vii) An analysis of the linkage between global climate change and the characteristics and occurrence of natural hazards in small island States.

Notes

1/ General Assembly resolution 46/182 of 19 December 1991, annex.

2/ See Report of the World Conference on Natural Disaster Reduction, Yokohama, Japan, 23-27 May 1994.

3/ Report of the Global Conference on the Sustainable Development of Small Island Developing States, Bridgetown, 25 April-6 May 1994 (A/CONF.167/9 and Corr.1 and 2) (United Nations publication, Sales No. E.94.I.18 and corrigenda), chap. I, resolution 1, annex II.

4/ Ibid., annex I.

5/ Report of the World Conference ..., chap. I, resolution 1, annex I.

6/ General Assembly resolution 50/6 of 24 October 1995.

7/ See General Assembly resolution 50/117 B of 20 December 1995.

8/ See General Assembly resolutions 49/22 A of 2 December 1994 and 50/117 A of 20 December 1995.

9/ See General Assembly resolution 44/236 of 22 December 1989, annex.

10/ See General Assembly resolutions 49/22 A and 50/117 A.

UNITED
NATIONS

E

Economic and Social Council

Distr.
GENERAL

E/CN.17/1996/20/Add.2
29 February 1996

ORIGINAL: ENGLISH

COMMISSION ON SUSTAINABLE DEVELOPMENT
Fourth session
18 April-3 May 1996

PROGRESS IN THE IMPLEMENTATION OF THE PROGRAMME OF ACTION FOR THE SUSTAINABLE DEVELOPMENT OF SMALL ISLAND DEVELOPING STATES

Report of the Secretary-General

Addendum

Sustainable development of energy resources in small island developing States

SUMMARY

In small island developing States, imported petroleum is the chief source of primary commercial energy. Their total daily petroleum consumption, however, is only about 1.3 per cent of total world consumption. Per capita energy consumption in small island developing States varies widely, from levels exceeding that in industrialized nations to as low as that in least developed countries, making it difficult to make many meaningful generalizations in consumption patterns and trends in small island developing States as a whole. Considering the dependence on imported energy supplies, small island developing States need to remain focused on improving the management and regulation of conventional power supply and petroleum imports.

Most small island developing States remain heavily dependent on traditional forms of energy such as fuelwood and bagasse, particularly in rural and remote areas. Attempts to develop renewable energy technologies, mostly small-scale, stand-alone units in dispersed settings, have had limited success. Solar energy has found use with solar photovoltaic systems for electrification of remote areas, and solar water heating is used in homes, hotels and commercial establishments. In further developing renewable energy sources, emphasis should be on the options that have shown some promise: solar photovoltaic systems in remote islands, solar water heating in urban areas and hydropower.

96-04798 (E) 010496

/...

CONTENTS

		Paragraphs	Page
EXPLANATORY NOTES			3
INTRODUCTION		1 - 3	4
I.	PRIMARY ENERGY RESOURCES	4 - 7	4
II.	NEW AND RENEWABLE SOURCES OF ENERGY	8 - 11	8
III.	ENERGY DEMAND	12 - 18	8
IV.	ENERGY RESOURCES DEVELOPMENT OPTIONS AND RECOMMENDATIONS	19 - 28	17

Tables

1.	Small island developing States - resources, primary energy consumption and production	6
2.	Total and per capita primary energy consumption, 1982-1992	10
3.	Share of petroleum imports in total merchandise imports and exports, and in electricity generation, 1992	12
4.	Net installed capacity of electric-generating plants and per capita consumption of electricity, 1982-1992	15
5.	Characteristics of technologies for production of electricity	18

EXPLANATORY NOTES

The following abbreviations and symbols have been used:

b/d	barrels per day
EEZ	exclusive economic zone
ESCAP	Economic and Social Commission for Asia and the Pacific
GEF	Global Environment Facility
GNP	gross national product
ha	hectare
kgoe	kilogram of oil equivalent
km	kilometre
km^2	square kilometre
kW	kilowatt
kWh	kilowatt-hour
kWp	kilowatt-peak
m	metre
m^3	cubic metre
MW	megawatt
OECD	Organisation for Economic Cooperation and Development
t	metric ton
toe	metric ton of oil equivalent
UNDP	United Nations Development Programme
US$	United States dollars
%	per cent
--	not available
...	nil

INTRODUCTION

1. Limited or scarce indigenous commercial energy resources and difficulties in securing energy supplies exacerbate the many constraints in economic and social development of small island developing States.

2. Imported petroleum is the chief source of primary commercial energy; indeed with the exception of hydropower in less than a third of the small island developing States, it is the only source of primary commercial energy in these States and territories. However, at the global level, small island developing States and territories are not significant consumers of petroleum. Their total consumption of petroleum is estimated at about 880,000 b/d out of a daily world consumption of more than 66 million b/d.

3. The cost, source and usage of energy have become major concerns for small island States, prompting a great need for careful energy planning. Energy management in small island developing States will essentially include increasing efficiency of energy use as well as an examination of indigenous energy resources. Environmental impacts are also of great importance and must be taken into careful consideration if the integrity of the food and fuel resource base are to be maintained and the natural endowments of the islands are to be preserved.

I. PRIMARY ENERGY RESOURCES

4. Petroleum is the chief source of primary commercial energy. It is produced in Bahrain, Barbados, Cuba, Papua New Guinea and Trinidad and Tobago. Petroleum export is an important source of revenue for Papua New Guinea, having exported about 120,000 b/d and Trinidad and Tobago, with an export of more than 150,000 b/d, in 1994. Bahrain is a major producer of natural gas, with an output of about 4.8 million tons of oil equivalent in 1992. 1/

5. Island arc basins in the Caribbean Sea and the south-western Pacific have been investigated for their hydrocarbon potential. However, since 1985, virtually all licensed acreage in the Caribbean Sea has been surrendered, in Aruba, the Bahamas, Barbados and the Netherlands Antilles. Elsewhere, in Seychelles, about 22,000 km^2 is still under licence for exploration, where marine seismic surveys of about 4,700 line-km were last conducted in 1987/88, and in Maldives, where licensed acreage was relinquished in 1991. In most of the island States and territories in the south-western Pacific, only preliminary reconnaissance exploration activities have been carried out. All licences in Fiji, Tonga and Vanuatu have been relinquished since the mid-1980s. In Fiji, four exploratory wells were drilled in 1982, but all tested dry with minor gas shows. 2/

6. As for coal resources, there are virtually no delineated coal deposits in any of the small island developing States and territories.

7. Hydropower resources for primary electricity production in the small island developing countries range from zero in the low countries (e.g., Maldives, Niue

and Tuvalu) to moderate (many island countries have mini-hydro power capacity of a few megawatts), to extensive (e.g., Fiji, Solomon Islands and Vanuatu, with capacity of a few hundred megawatts). As shown in table 1, hydropower has been developed in 11 small island developing States and territories, where it accounts for 4 to 13 per cent of total commercial energy supply; Comoros, Mauritius and Sao Tome and Principe in the Atlantic and Indian Oceans and adjacent areas; Fiji, Palau and Samoa in the Pacific; and Dominica and Saint Vincent and the Grenadines in the Caribbean Sea. Total annual hydroelectricity generation varies widely in these countries, from a high of about 460 million kWh in Papua New Guinea to about 2 million kWh in Comoros. The relative scarcity of hydropower development in the island countries, while technically successful, was in large part attributable to many financial and institutional problems associated with their development and, not least, environmental considerations.

Table 1. Small island developing States - resources, primary energy consumption and production

State or territory	Total population 1992 (thousands)	Land area (km²)	GNP per capita 1992 (US$)	EEZ (km²)	Forest area 1989/90 (as % of land area)	Consumption of primary energy 1992 (thousand toe)	Oil (thousand t)	Hydro-electricity (million kWh)	Fuelwood (thousand m³)	Bagasse (thousand t)
Atlantic Ocean										
Cape Verde	384	4 033	840	789 000	..	36	...	...	..	..
Sao Tome and Principe	124	964	370	128 000	..	25	...	8	..	..
Indian Ocean and adjacent areas										
Comoros	585	2 171	530	249 000	15.7	22	...	2	..	..
Maldives	227	298	700	959 000	3.3		...	...	..	..
Mauritius	1 098	2 045	2 800	1 113 000	30.8	448	...	113	40	2 221
Seychelles	72	280	5 750	1 349 000	18.5	50	...	..	..	..
Pacific Ocean										
Cook Islands	17	236	..	1 830 000	..	7	...	...	..	..
Fiji	739	18 274	2 050	1 135 000	64.9	253	...	390	37	1 471
Kiribati	74	728	..	2 641 000	..	7	...	...	..	..
Marshall Islands	49	181	..	2 131 000	..	..	...	...	..	..
Micronesia, Federated States of	110	701	..	2 978 000	..	..	...	...	..	..
Nauru	10	21	..	431 000	..	44	...	...	..	..
Niue	2	259	..	390 000	..	1	...	..	..	..
Palau	16	416	..	629 000	..	82	...	30	..	..
Papua New Guinea	4 056	461 691	990	2 367 000	84.4	784	...	460	5 533	98
Samoa	158	2 842	960	9 600	47.3	45	...	20	70	7
Solomon Islands	342	28 446	720	1 340 000	91.5	53	...	..	138	..
Tokelau	2	10	..	290 000	..	..	...	...	..	..
Tonga	97	699	..	597 000	..	30	...	...	..	..
Tuvalu	12	24	..	328 000	.	..	...	...	..	..
Vanuatu	157	14 763	1 230	680 000	75.0	20	...	...	24	..
Caribbean Sea										
Antigua and Barbuda	66	442	6 100	.	..	96	...	...	..	..

/...

State or territory	Total population 1992 (thousands)	Land area (km²)	GNP per capita 1992 (US$)	EEZ (km²)	Forest area 1989/90 (as % of land area)	Consumption of primary energy 1992 (thousand toe)	Oil (thousand t)	Hydro-electricity (million kWh)	Fuelwood (thousand m³)	Bagasse (thousand t)
Aruba	62		..	..	..	213	...	...	..	..
Bahamas	264	13 935	11 670	759 000	32.4	602	...	...	..	..
Barbados	259	431	6 210	167 000	..	328	62	...	..	179
Cuba	10 811	114 524	..	363 000	25.1	8 717	936	82	3 529	22 820
Dominica	72	751	2 670	20 000	41.3	21	...	16	..	..
Dominican Republic	7 471	49 000	1 070	..	12.6	3 040	...	...	..	..
Grenada	91	344	2 350	268 000	8.8	40	...	...	..	..
Haiti	6 795	28 000	..	..	1.3	223	...	...	..	..
Jamaica	2 469	10 991	1 390	298 000	17.2	2 604	...	130	13	743
Netherlands Antilles	175	961	..	..	..	923	...	...	..	..
Saint Kitts and Nevis	42	268	4 120	68 000	16.7	25	...	...	..	64
Saint Lucia	137	616	2 900	68 000	13.1	331	...	...	..	..
Saint Vincent and the Grenadines	109	383	2 040	68 000	35.9	31	..	39	..	..
United States Virgin Islands	107	342	..	a/	..	2 266	...	...	..	..
Mediterranean Sea										
Cyprus	716	9 251	10 300	99 000	13.3	1 446	...	...	..	..
Others										
Bahrain	533	622	7 940	5 000	5.9	5 514	2 032 b/	...	..	..
Papua New Guinea	4 056	461 691	990	2 367 000	84.4	784	..	460	5 533	98
Singapore	2 769	581	16 970	300	4.9	16 482	...	...	..	..
Trinidad and Tobago	1 265	5 130	3 990	77 000	43.1	7 458	7 009	...	22	391

Source: Department for Policy Coordination and Sustainable Development of the United Nations Secretariat, based on Energy Statistics Yearbook, 1992 (United Nations publication, Sales No 94 XVII 9), and International Monetary Fund, International Financial Statistics, various issues.

a/ Included in United States EEZ.

b/ Bahrain's natural gas production in 1992 = 4,791,000 toe.

/...

II. NEW AND RENEWABLE SOURCES OF ENERGY

8. Of the new and renewable sources of energy, biomass accounts by far for the major share in small island countries. Fuelwood is most commonly used for cooking, especially in rural households. Almost all fuelwood for cooking is obtained at no financial cost from natural forests. Few island countries have any sizeable commercial production of fuelwood and whatever is available in the market appears to be purchased by relatively affluent households, for supply conveniences or for special occasions; very few island countries have forest areas covering a substantial part of their land area (see table 1). Also widely used are coconut residues (shells, husks and stemwood) and residues from coffee, cocoa and such other crops as maize, cassava, peanuts and rice. Biofuel is also used in small-scale agro-industry for process heat for drying copra, coffee, tea, fish and other foodstuffs.

9. In those island countries where sugar cane is grown in large quantities, bagasse is used as fuel for sugar mills. Notably, in Fiji, about 30 per cent of the peak electricity demand is produced from bagasse, including electricity used in the sugar mills themselves. 3/

10. The principal uses of direct solar energy in the island countries are for heating and drying, for solar water heating in urban houses as well as commercial establishments and drying of crops for consumption or processing, as well as for solar water purification and distillation on a limited scale. Solar energy is also used for photovoltaic systems as electric power sources in some rural areas and remote islands. Solar photovoltaic systems have been used on many islands, mainly in dispersed settings, for telecommunication transmission and reception, lighting, small medical refrigerators and water pumping. The largest concentration of photovoltaic modules (more than 8,000) is in the French Polynesian islands, with a combined generating capacity of more than 280 kW (on average about 50 watts per unit, sufficient for an incandescent light-bulb). Also, in Tuvalu, photovoltaic-based electricity is used for lighting needs in a number of households in the outer islands and customer growth is limited only by the availability of new photovoltaic units, constrained by lack of capital and reliant on donors. Photovoltaic use is growing, owing in large part to declining installation and operating costs.

11. Prospects have been improving for electricity generation by wind turbines, but much depends on site availability. In the tropics, locations with favourable wind regimes are scarce. However, several small island developing States have favourable sites for wind energy, perhaps prone to severe storm conditions; Cape Verde has a number of grid-connected wind turbines in operation.

III. ENERGY DEMAND

12. Total energy consumption in the small island developing countries under consideration has been gradually increasing during the period 1982-1992, from about 7 million to about 8.4 million tons of oil equivalent, an average annual increase of less than 2 per cent. However, not all of these small island developing States experienced increases; total energy consumption in a number of

them declined; in fact, there were more declines registered in per capita energy consumption as increasing demand from expanding populations outpaced energy supply (see table 2).

13. In 1992, per capita energy consumption in these small island developing States ranged widely from a low of less than 100 kilograms of oil equivalent (kgoe) to more than 5,000 kgoe, averaging about 1,200 kgoe. In comparison, worldwide, an average of about 600 kgoe was registered for all developing countries and about 60 kgoe in the least developed countries. Per capita energy consumption in more than 20 small island developing States exceeds the average of developing countries as a whole, but in a number of them consumption levels fall in the range of least developed countries. In four of the island developing countries and territories - Bahrain, Nauru, Netherlands Antilles and United States Virgin Islands - per capita energy consumption exceeds the average of OECD countries. Owing to the wide range in energy consumption among small island developing States, it is difficult to make any generalizations in consumption patterns and trends in these countries. However, as elsewhere, increasing use of modern fuels and per capita GNP are closely linked.

14. Most small island developing States depend heavily on traditional forms of energy such as fuelwood, charcoal and bagasse, particularly in rural areas. Traditional fuels are estimated to account for more than 50 per cent of total energy in many small island developing States compared to an average of about 25 per cent for all developing countries. As mentioned earlier, of the indigenous energy sources, biomass accounts for the largest share of the energy requirement, as it is used extensively for cooking and as a fuel in a variety of small-scale agro-industries.

15. Imported oil, mainly end-use products, is the main source of commercial energy, especially in small remote islands at great distances away from mainland areas. In fact it is the only source of primary commercial energy in about 28 small island developing States. However, to put the daily petroleum consumption of small island developing States in proper perspective, current daily demand is about 0.88 million b/d out of a total world consumption of more than 66 million b/d, an amount of about 1.3 per cent of world petroleum demand. Most of the imported petroleum, mainly products, are used for transportation and electricity generation. The share of imported petroleum used for electricity generation varies widely among small island developing States as seen in table 3, from about 70 to 100 per cent in the high range to less than 25 per cent in the low end; on average, in small island developing States, more than a third of the petroleum is converted to electricity.

16. Table 3 also shows that, in small island developing States, the share of petroleum imports in total imports ranges from a low of about 3 per cent to more than 20 per cent. The ratio of petroleum imports to total exports on average is comparatively higher than in other developing countries: in a number of small island developing States, the value of petroleum imports exceeds the value of total merchandise exports.

Table 2. Total and per capita primary energy consumption, 1982-1992

State or territory	Total energy consumption (thousand toe)			Per capita consumption (kgoe)		
	1982	1992	Annual change (percentage)	1982	1992	Annual change (percentage)
Atlantic Ocean						
Cape Verde	34	36	0.5	110	94	-1.4
Sao Tome and Principe	12	25	6.7	135	202	3.7
Indian Ocean and adiacent areas						
Comoros	12	22	5.5	29	38	2.5
Maldives	6	33	15.6	37	145	12.5
Mauritius	170	448	8.8	171	408	7.9
Seychelles	28	50	5.3	406	694	4.9
Pacific Ocean						
Cook Islands	12	7	-4.9	632	412	-3.9
Fiji	256	253	-0.1	393	342	-1.3
Kiribati	9	7	-2.3	150	95	-4.1
Marshall Islands	--	--	--	--	--	
Micronesia, Federated States of	--	--				
Nauru	40	44	0.9	5 714	4 400	-2.4
Niue	1	1	0.0	250	500	6.3
Northern Marianas	--	--	--	--		
Palau	50	82	4.5	352	369	0.4
Papua New Guinea	667	784	1.5	195	193	-0.1
Samoa	39	45	1.3	244	285	1.4
Solomon Islands	41	53	2.3	165	155	-0.6
Tokelau	--	--	--	--		
Tonga	14	30	6.9	139	309	7.3
Tuvalu	--	--		--	--	
Vanuatu	17	20	1.5	134	127	-0.5
Caribbean Sea						
Antigua and Barbuda	83	96	1.3	1 078	1 455	2.7
Aruba	--	213		--	3 435	
Bahamas	828	602	-2.9	3 851	2 280	-4.8
Barbados	210	328	4.1	814	1 266	4.0

State or territory	Total energy consumption (thousand toe) 1982	1992	Annual change (percentage)	Per capita consumption (kgoe) 1982	1992	Annual change (percentage)
Cuba	10 303	8 717	-1.5	1 046	806	-2.4
Dominica	13	21	4.4	173	292	4.8
Dominican Republic	1 775	3 203	5.4	305	429	3.1
Grenada	20	40	6.3	183	440	8.0
Haiti	223	244	0.8	37	36	-0.2
Jamaica	1 917	2 604	2.8	861	1 055	1.8
Netherlands Antilles	2 444	923	-8.8	9 660	5 274	-5.5
Saint Kitts and Nevis	21	25	1.6	467	595	2.2
Saint Lucia	36	331	20.3	293	2 416	19.3
Saint Vincent and the Grenadines	15	31	6.6	149	284	5.9
United States Virgin Islands	2 812	2 266	-2.0	28 120	21 178	-2.6
Mediterranean Sea						
Cyprus	831	1 446	5.0	1 292	2 020	4.1
Others						
Bahrain	3 360	5 514	4.5	8 842	10 345	1.4
Singapore	10 496	16 482	4.1	4 239	5 952	3.1
Trinidad and Tobago	4 549	7 458	4.5	4 208	5 896	3.1

Source: Department for Policy Coordination and Sustainable Development of the United Nations Secretariat, based on Energy Statistics Yearbook, 1984 and 1992 (United Nations publications, Sales Nos. 86.XVII.2 and 94.XVII.9).

Table 3. Share of petroleum imports in total merchandise imports and exports, and in electricity generation, 1992

State or territory	Petroleum import (in thousand toe)	Value of petroleum import (in million US dollars) (estimated)	Total merchandise import (value in million US dollars)	Oil import as percentage of total imports	Total merchandise export (value in million US dollars)	Oil import as percentage of total exports	Petroleum import - approximate calorific equivalent (in million kWh) a/	Electricity production by thermal plants (in million kWh) b/	Share of petroleum import used in electricity generation (percentage)
Atlantic Ocean									
Cape Verde	36	5.26	180.00	2.63	5.00	105.12	144	37	25.7
St. Pierre and Miquelon	32	4.67	..	..	..	..	128	49	38.3
Sao Tome and Principe	25	3.65	..	..	..	..	100	7	7.0
Indian Ocean and adjacent areas									
Comoros	22	3.21	..	..	..	..	88	14	15.9
Maldives	33	4.82	189.00	2.29	40.00	12.05	132	30	22.7
Mauritius	448	65.41	1 623.00	3.61	1 290.00	5.07	1 792	812	45.3
Seychelles	50	7.30	192.00	3.42	44.00	16.59	200	109	54.5
Pacific Ocean									
Cook Islands	7	1.02	..	..	..	..	28	16	57.1
Fiji	253	36.94	624.00	5.33	435.00	8.49	1 012	87	8.6
Kiribati	7	1.02	37.00	2.49	5.00	20.44	28	7	25.0
Marshall Islands	..	..	..	..	..	..	..	..	..
Micronesia, Federated States of	..	..	..	..	..	..	..	..	..
Nauru	44	6.42	..	..	..	..	176	30	17.0
Niue	1	0.15	..	..	..	..	4	3	75.0
Palau	82	11.97	..	..	..	..	328	..	..
Papua New Guinea	..	..	1 523.00	..	1 790.00	..	0	1 330	..
Samoa	45	6.57	113.00	5.23	6.00	109.50	180	28	15.6
Solomon Islands	53	7.74	..	..	..	..	212	30	14.2
Tokelau	..	0.00	..	..	..	..	..	..	..
Tonga	30	4.38	63.00	6.26	12.00	36.50	120	27	22.5
Tuvalu	..	..	..	..	..	..	..	..	..
Vanuatu	20	2.92	83.00	3.17	20.00	14.60	80	29	36.3

/...

State or territory	Petroleum import (in thousand toe)	Value of petroleum import (in million US dollars) (estimated)	Total merchandise import (value in million US dollars)	Oil import as percentage of total imports	Total merchandise export (value in million US dollars)	Oil import as percentage of total exports	Petroleum import - approximate calorific equivalent (in million kWh) a/	Electricity production by thermal plants (in million kWh) b/	Share of petroleum import used in electricity generation (percentage)
Caribbean Sea									
Antigua and Barbuda	96	14.02	--	--	--	--	384	95	24.7
Aruba	213	31.10	--	--	--	--	852	350	41.1
Bahamas	602	87.89	--	--	--	--	2 408	975	40.5
Barbados	328	47.89	471.00	9.15	190.00	25.20	1 312	537	40.9
Cuba	--	--	3 690.00	--	3 585.00	--	--	13 610	--
Dominica	21	3.07	111.00	2.49	56.90	5.48	84	15	17.9
Grenada	40	5.84	117.00	4.49	23.00	25.39	160	62	38.8
Jamaica	2 604	380.18	1 672.00	20.46	1 047.00	36.31	10 416	2 605	25.0
Netherlands Antilles	923	134.76	2 174.00	5.58	1 114.00	12.10	3 692	853	23.1
Saint Kitts and Nevis	25	3.65	--	--	--	--	100	40	40.0
Saint Lucia	331	48.33	313.00	13.90	123.00	39.29	1 324	107	8.1
Saint Vincent and the Grenadines	31	4.53	--	--	--	--	124	12	9.7
United States Virgin Islands	2 266	330.84	--	--	--	--	9 064	1 020	11.3
Mediterranean Sea									
Cyprus	1 446	211.12	3 289.00	5.78	1 002.00	21.07	5 784	2 404	41.6
Others									
Bahrain	--	--	4 125.00	--	3 368.00	--	--	3 510	--
Singapore	16 482	2 406.37	72 534.00	2.99	63 516.00	1.79	65 928	17 543	26.6
Trinidad and Tobago	--	--	1 431.00	--	1 869.00	--	0	3 945	--

Source: Department for Policy Coordination and Sustainable Development of the United Nations Secretariat, based on Energy Statistics Yearbook, 1992 (United Nations publication, Sales No. 94.XVII.9) and Statistical Yearbook, No. 39 (United Nations publication, Sales No. 94.XVII.1).

a/ One million metric tons of oil produces about 4x10^{4} kWh of electricity in a modern power station.

b/ It is assumed that thermal electricity generation in small island developing States, as tabulated in Energy Statistics Yearbook, 1992, is by oil-fired or diesel-based generating plants. However, for all practical purposes, petroleum-based products provided the bulk of primary energy in almost all small island developing States.

17. In absolute terms, the use of new and renewable sources of energy is increasing, accounting for a substantial part of rural energy demand in many small island developing States, although their share of total energy supply remains at a level significantly below their potential. Most islands have abundant solar and ocean resources and considerable wind and hydropower potential, as well as geothermal resources in a number of them. Given the remote location of many small island developing States, their small energy demands and high costs of oil imports, the development of renewable energy sources seems ideal. However, in spite of efforts to develop indigenous energy resources, using a variety of pilot projects, including biogas from animal dung, biomass gasifiers, alcohol fuel, small-scale wind systems and solar photovoltaics, the overall contribution of renewable energy sources to the energy balance of most small island developing States has been disappointing. At present, only small-scale hydropower, fuelwood and charcoal contribute significantly to the overall energy needs of small island developing States, particularly in rural areas and remote islands. More recently, the use of solar energy in the Pacific islands has been increasing. Following a number of demonstration projects in the early 1980s, solar water heating is being increasingly used throughout the Pacific islands in upper-income homes, hotels and commercial establishments. 4/ Solar photovoltaic systems have also been used as an alternative to diesel generation for the electrification of remote areas.

18. As in most other developing countries, electricity in small island developing States is available mainly in cities and surrounding rural areas, and in most of these countries electricity is generated from diesel-based systems, since that is the most economical option for power generation in remote areas. However, it is very costly because most generation systems are on a small-scale to very small-scale basis. In most Pacific islands, for example, the cost of electricity generation using diesel-based utilities with capacities of 5 to 20 MW is more than US$ 0.20 per kilowatt-hour. By comparison, electricity generation costs in industrialized countries average $0.10 to $0.15 per kilowatt-hour. As can be seen in table 4, in 1992, total net installed capacity of electricity-generating plants in small island developing States and territories was about 3,500 MW, with individual country capacities ranging from more than 400 MW in the Bahamas to 5 MW and less in a number of these countries. Per capita electricity consumption has been increasing substantially in most small island developing States and territories, more than doubling during the period 1982-1992. However, in a number of these countries, negative growth rates were registered. The average per capita electricity consumption in the OECD countries of more than 8,000 kWh far exceeds that of the small island developing States.

Table 4. Net installed capacity of electric-generating plants and per capita consumption of electricity, 1982-1992

State or territory	Net installed capacity of electric-generating plants (thousand kW)			Per capita consumption of electricity (kWh)		
	1982	1992	Average annual change (percentage)	1982	1992	Average annual change (percentage)
Atlantic Ocean						
Cape Verde	3	7	7.7	58	96	4.6
Sao Tome and Principe	5	6	1.7	124	126	0.1
Indian Ocean and adjacent areas						
Comoros	4	5	2.0	24	27	1.1
Maldives	2	14	17.8	49	132	9.0
Mauritius	243	336	2.9	432	842	6.1
Seychelles	19	28	3.5	768	1 514	6.2
Pacific Ocean						
Cook Islands	6	6	0.0	526	941	5.3
Fiji	113	200	5.2	497	645	2.4
Kiribati	2	2	0.0	100	95	-0.5
Marshall Islands	--	--		--	--	
Micronesia, Federated States of	--	--		--	--	
Nauru	10	10	0.0	3 714	3 000	-1.9
Niue	1	1	0.0	750	1 500	6.3
Palau	48	62	2.3	1 021	914	-1.0
Papua New Guinea	434	490	1.1	382	441	1.3
Samoa	17	19	1.0	275	304	0.9
Solomon Islands	12	12	0.0	100	88	-1.2
Tokelau	--	--		--	--	
Tonga	6	7	1.4	119	278	7.7
Tuvalu	--	--		--	--	
Vanuatu	10	11	0.9	165	185	1.0
Caribbean Sea						
Antigua and Barbuda	26	26	0.0	857	1 439	4.7
Aruba	--	90		--	5 645	
Bahamas	312	401	2.3	3 786	3 693	-0.2
Barbados	94	140	3.6	1 341	2 073	4.0

/...

State or territory	Net installed capacity of electric-generating plants (thousand kW) 1982	1992	Average annual change (percentage)	Per capita consumption of electricity (kWh) 1982	1992	Average annual change (percentage)
Cuba	2 975	3 988	2.7	1 124	1 155	0.2
Dominica	7	8	1.2	147	431	9.8
Dominican Republic	960	1 447	3.7	551	713	2.3
Grenada	8	9	1.1	229	681	9.9
Haiti	126	153	1.8	59	70	1.6
Jamaica	740	732	-0.1	1 011	1 108	0.8
Netherlands Antilles	390	200	-6.1	9 130	4 874	-5.7
Saint Kitts and Nevis	15	15	0.0	778	952	1.8
Saint Lucia	16	22	2.9	496	781	4.1
Saint Vincent and the Grenadines	10	14	3.1	297	468	4.1
United States Virgin Islands	341	316	-0.7	8 550	9 533	1.0
Mediterranean Sea						
Cyprus	333	546	4.5	1 779	3 358	5.8
Others						
Bahrain	588	1 050	5.3	5 287	6 585	2.0
Singapore	2 106	3 550	4.8	3 153	6 336	6.4
Trinidad and Tobago	760	1 150	3.8	2 482	3 119	2.1

Source: Department for Policy Coordination and Sustainable Development of the United Nations Secretariat, based on Energy Statistics Yearbook, 1984 and 1992 (United Nations publications, Sales Nos. 86.XVII.2 and 94.XVII.9).

IV. ENERGY RESOURCES DEVELOPMENT OPTIONS AND RECOMMENDATIONS

19. The modern economic sector of small island developing States depends almost entirely on imported petroleum products for energy, accounting for well over 90 per cent of the commercial energy used. The lack of indigenous fossil fuels in virtually all of these countries and the total reliance on a single imported energy source have caused severe balance-of-payment problems in their economies (see table 3 for the ratio of value of petroleum imports and value of total merchandise exports).

20. During the 1980s, expectations were high for the development of indigenous renewable energy resources. It was widely believed then that renewable energy technologies were becoming technically and economically viable and that the energy environment of islands was ideal for these technologies, given the remote locations, high cost of petroleum imports and abundant supplies of indigenous solar, biomass, hydropower, wind and ocean resources. In spite of concerted efforts to develop the indigenous renewable energy resources through a wide range of demonstration and investment projects using a variety of technologies, renewable energy sources have not yet made a significant contribution to the energy balance of the small island developing economies. However, the development of hydropower in a number of island countries has been relatively successful, as has been that of solar photovoltaics to a limited extent. None the less, during that time, petroleum-product demand in small island developing States increased steadily and the outlook is that the growth rate will increase well into the next century.

21. Thus, the experiences of the 1980s indicate that the energy strategies of small island developing economies may need to refocus on improving the management and regulation of conventional power plants, at least until the time when the energy supply mix in small island developing States becomes more diversified with significant contributions from renewable energy technologies. In the meantime, small island developing States will continue to require assistance in the management and supply of conventional power sources and petroleum products.

22. The development of indigenous new and renewable sources of energy should be focused on the few options that have proved to hold promise for technical, economic and financial viabilities in the setting of small island developing economies. The renewable energy technologies and resources that appear to be more promising in the near term are solar photovoltaic-based utilities, particularly for remote islands; large-scale and mini-hydropower plants, where adequate sites and institutional support are available; wind turbine generators, depending on favourable wind regimes; and the enhanced use of biomass fuel, where good sustainable biomass cover exists. In the long term, ocean thermal and seawave may prove to be substantial energy sources, although attempts at their commercial development have not yet met with success. For a comparison between technologies for production of electricity, characteristics of these technologies are summarized in table 5.

Table 5. Characteristics of technologies for production of electricity

Technology	Size/description of system	Estimated cost/KwH a/ (US$)	Capacity factor range b/ (percentage)	Area required	Temporal characteristics
Wind	Few to tens of kW, not grid connected	0.50-1.00	10-30	Little	Intermittent, needs storage
Photovoltaic	Several kW range, not grid connected	1.00-2.00	15-25	20m²/kWp	Intermittent, needs storage
Solar thermal energy conversion	Several kW to tens of MW, stand alone or grid connected	0.50-2.00	15-25	3-15 ha/MW	Intermittent, needs storage
Hydropower	Few MW and up, grid connected	0.50-1.00	50-70	As required	Water availability dictates limitations
Ocean thermal energy conversion-shore based	5 MW 40 MW	0.50-1.00	70-90	Little	Baseload power
Solar pond	5 MW salt gradient excavating/ diking	0.50-1.00	70-90	20 ha/MW	Baseload power with peaking possibilities
Wood	Few MW and up, boiler, gasifier	0.15-0.25 c/	70-90	800 ha/MW	Baseload power
Coal	Few MW and up	0.10-0.25 c/	70-90	1 ha/MW	Baseload power
Diesel	Fractional to several MW engine generator	0.40-0.50 c/	70-90	Little	Baseload power
Residual oil	Several tens of MW boiler	0.25-0.30 c/	70-90	Little	Baseload power

Source: Department for Policy Coordination and Sustainable Development of the United Nations Secretariat, based on various reports and studies.

a/ Very rough estimates; actual costs can be expected to be higher.

b/ Fraction of time source can produce energy, averaged over a year of operation.

c/ Environmental protection equipment will increase cost.

23. There are many and varied reasons for the disappointing results of most renewable energy technologies promoted in the small island countries, from a lack of detailed understanding of the economic and technical viability of these technologies in the setting of small island developing States, to insufficient efforts in organizing active participation of the local community at the early planning stage. It is important that adequate training in system operation and maintenance be provided on a long-term basis and support for local organizations to plan, operate, maintain, finance and expand the use of the technology be continued until a truly sustainable basis is achieved.

24. Energy conservation and efficiency measures play a key role in any energy management/planning process. Programmes designed for energy conservation on both the supply and the demand sides are the most effective ways to substantial savings in energy consumption. Energy conservation and efficiency measures are all the more imperative given that the economic development process has traditionally led to higher energy intensities per unit of economic output in its early stages.

25. Increased use of fuelwood, a renewable energy source, has led to much deforestation. To enhance the forest cover for sustainable fuelwood resources development, the Global Environment Facility (GEF) can play a role in the protection of forests and reforestation with new and additional grant and concessional financing, as these activities clearly relate to the four focal areas of GEF, are country-driven and are national priorities to support sustainable development. GEF financing could also contribute to the transition from the pilot phase of those renewable energy technologies with demonstrated viability, hydroelectricity, solar heating and photovoltaics, to the longer term operational status.

26. It is apparent that small island developing economies will continue to rely on imported petroleum products for their commercial energy requirements and on biomass for non-commercial needs. In a number of island countries, hydroelectricity has gained significantly in the commercial energy mix, although new installations of scale are not foreseen in the near term. On many of the islands, use of biomass as domestic fuel and for process heat for drying agricultural products and foodstuff appears to be sustainable; however, increased consumption and long-term environmental impacts may need closer attention. For the petroleum products import sector, the main issues are, on the economics side, the need to monitor and analyse petroleum products transportation and distribution costs, and on environment-related matters, for increased surveillance of the integrity of offshore and onshore transportation of petroleum products, storage safety standards and waste oil disposal.

27. Several factors constrain the market penetration of renewable energy technologies in small island developing States: mainly, technology, as local producers are not in a position to service a larger-scale demand, and price constraints, as in the case of solar photovoltaic units, customer growth for which is limited by lack of capital and in several cases reliance on donors.

28. The development of electric power supply and most attempts to develop renewable energy sources in small island developing States were largely funded by donor countries, on grant, concessional and, in a few cases, near-commercial terms. Small island developing States will continue to need such assistance to enable them to make the necessary investments to expand energy services beyond urban areas.

Notes

1/ All energy statistics are based on Energy Statistics Yearbook, various issues.

2/ World Petroleum Trends, various issues.

3/ Pacific Regional Energy Assessment, vol. 1, Overview, (World Bank, in cooperation with the UNDP/ESCAP Pacific Energy Development Programme, Asian Development Bank and the Forum Secretariat Energy Division, 1992)

4/ Ibid.

UNITED
NATIONS

E

Economic and Social Council

Distr.
GENERAL

E/CN.17/1996/20/Add.3
29 February 1996

ORIGINAL: ENGLISH

COMMISSION ON SUSTAINABLE DEVELOPMENT
Fourth session
18 April-3 May 1996

PROGRESS IN THE IMPLEMENTATION OF THE PROGRAMME OF ACTION FOR THE SUSTAINABLE DEVELOPMENT OF SMALL ISLAND DEVELOPING STATES

Report of the Secretary-General

Addendum

Sustainable tourism development in small island developing States

CONTENTS

	Paragraphs	Page
INTRODUCTION	1 - 2	3
I. GENERAL OVERVIEW OF PROGRESS ACHIEVED, MAIN POLICY ISSUES, EXPERIENCE GAINED AND PROBLEMS ENCOUNTERED BY SMALL ISLAND DEVELOPING STATES IN TOURISM	3 - 37	3
A. Economic impact	3 - 26	3
1. Overview of performance	3 - 14	3
2. Regional perspectives	15 - 18	7
3. Emerging trends	19 - 24	8
4. Risks of over-reliance on tourism	25 - 26	9
B. Social and cultural impacts	27 - 30	10
C. Environmental impacts	31 - 37	11

96-04804 (E) 020496

/...

CONTENTS (continued)

		Paragraphs	Page
	1. Land resources and terrestrial biological diversity	32	11
	2. Waste management	33 - 34	11
	3. Coastal area degradation	35	12
	4. Freshwater resources	36	12
	5. Climate change and sealevel rise	37	12
II.	MATTERS RELATED TO POLICIES, FINANCE, CAPACITY-BUILDING, TECHNOLOGY AND INFRASTRUCTURE	38 - 57	13
	A. At the national level	39 - 49	13
	1. Development policy framework	39	13
	2. Legislative framework	40	14
	3. Investment	41 - 44	14
	4. Human and institutional capacity	45	15
	5. Infrastructure	46 - 48	15
	6. Technology	49	16
	B. At the regional level	50 - 57	16
III.	COUNTRY EXPERIENCES	58 - 64	18
IV.	EXPERIENCES OF MAJOR GROUPS AND NON-GOVERNMENTAL ORGANIZATIONS: THEIR ROLE AND INVOLVEMENT IN THE PROMOTION AND MAINTENANCE OF SUSTAINABLE TOURISM DEVELOPMENT IN SMALL ISLAND DEVELOPING STATES	65 - 69	21
	A. Private sector	65 - 67	21
	B. Non-governmental organization and community involvement	68 - 69	21
V.	ACTIVITIES AND EXPERIENCES IN INTERNATIONAL COOPERATION IN SUSTAINABLE TOURISM DEVELOPMENT	70 - 72	22
	A. Organs of the United Nations system	70 - 71	22
	B. Other intergovernmental bodies	72	23
VI.	MAIN FINDINGS	73 - 75	24

INTRODUCTION

1. The Programme of Action for the Sustainable Development of Small Island Developing States, in chapter VIII, acknowledges the important contribution of tourism to the development of many small island developing States, while noting that "if not properly planned and managed, tourism could significantly degrade the environment on which it is so dependent". 1/ In this vein, it espouses actions to be promoted at the national, regional and international levels in order to ensure the viability of the sector and its harmonious development with the cultural and natural endowments of small island developing States.

2. The present report was prepared with the help of inputs from several agencies and organizations with an interest or involvement in sustainable tourism, and of relevant analytical reports and statistical data published by various organizations within and outside the United Nations system. The first part of the report presents an analysis of the main social, economic and environmental impacts of tourism development on small island States, along with a discussion of the emerging trends and principal risks involved in over-reliance on the sector. The rest of the report highlights country experiences, the role of major groups, including the private sector, some key policy issues in sustainable tourism development, and experiences and activities in international cooperation in promoting the goals and objectives of sustainable tourism development in small island developing States. It concludes with a brief summary of major findings. Recommendations for the future course of tourism development in small island developing States are contained in the report of the Secretary-General (E/CN.17/1996/20).

I. GENERAL OVERVIEW OF PROGRESS ACHIEVED, MAIN POLICY ISSUES, EXPERIENCE GAINED AND PROBLEMS ENCOUNTERED BY SMALL ISLAND DEVELOPING STATES IN TOURISM

A. Economic impact

1. Overview of performance

3. Tourism is often identified as a promising growth sector in small island developing States. It offers one of the few opportunities for economic diversification in very small islands. Tourism has many linkages with other economic sectors, and if integrated into national development plans with adequate provisions for intersectoral linkages, it can contribute to the growth of all tourism-related activities in all of the major economic sectors - agriculture, including fishing, industry and services, including transportation. At present, the extent of tourism activities in small island developing States varies widely between geographical regions as well as between countries within regions. Likewise, the economic benefits derived from tourism are diverse. In some small island developing States, tourism has become the major contributor to the gross domestic product (GDP), while in others it is still relatively undeveloped.

4. It is well known that in small island developing States, the scope for economic diversification and growth is limited. Their key constraints are small land areas and small populations. The relatively larger ones have the human resources potential to support a number of economic sectors viably and thus to benefit from linkages of those sectors with the tourism sector. The smaller ones, however, do not have such potential and will therefore have to be more reliant on imports to meet the material demands of the tourism sector. Other things remaining equal, the net benefits, i.e., domestic value-added per visitor, derived by the smaller islands from tourism will be relatively smaller.

5. The main objectives of the promotion of tourism as a growth sector are to accelerate the growth of national incomes, gainful employment, foreign exchange earnings and government tax revenues. A thorough evaluation of the contribution of tourism in small island developing States with respect to these parameters is at present hampered by the incompleteness of data. 2/ In a sample of 29 small island developing States for which data are available, gross direct receipts from tourism as a percentage of GDP ranged from a meagre 1 per cent to 88 percent on the average during the period 1989-1993, (see annex table 1). 3/ In this sample of countries, tourism and tourism-related activities have become the mainstay of the economy in Antigua and Barbuda, Aruba, Barbados, Saint Lucia, the Bahamas, Saint Kitts and Nevis and Seychelles, or mostly in the small island developing States in the Caribbean. Important exceptions apart, tourism makes the least contribution to national income in most of the African and Pacific small island developing States.

6. With a few exceptions, most small island developing States have realized a fast, although diverse, pace of growth of gross tourism receipts in nominal terms in recent years. During the period 1989-1993, in 24 out of 34 for which data are available, the growth of gross receipts from tourism ranged from 2 per cent to 61 per cent per annum on the average (see annex table 1). 3/ In most, it exceeded 10 per cent and in 9 it was 15 per cent or more. Generally, but not universally, the fast pace of growth reflects low initial levels of receipts from tourism. Even among those with low initial levels, several countries did not do so well.

7. In view of the constraints faced by small island developing States in promoting exports of goods in an increasingly competitive and fast-changing international economy, by and large, these States are giving increasing importance to tourism as a source of raising their foreign exchange earnings. The available data show that during the period 1980-1992, for a sample of 26 small island developing States, the percentage increase in the ratio of foreign exchange earnings from tourism to total export earnings ranged from 2 per cent to 453 per cent (see annex table 3). 3/ In 10 of them, it exceeded 50 per cent. In 1992, the contribution of tourism to total export earnings in 23 countries ranged from a meagre 2 per cent to 83 per cent; in 13 of them it exceeded 25 per cent (see annex table 3). 3/

8. The data on average daily expenditures per visitor for 10 countries ranged from US$ 41 to $304 in 1992. In 1989, average daily expenditures per visitor for 23 small island developing States ranged from $37 to $226 (see annex table 3). 3/ The diversity of performance even in these small samples is significant. It suggests that those countries that want to promote tourism as a

growth sector need, in addition to adequate investments in tourism infrastructure, to make greater efforts to enhance the diversity and quality of goods and services they sell to visitors.

9. Countries that have relatively full employment are less interested in the employment potential of expansion of tourism than those that have substantial unemployment. The employment advantages of tourism are twofold: first, the industry is labour-intensive, and secondly, much of the employment is relatively unskilled. Consequently, investment in tourism produces a higher and faster increase in employment than equal investment in other activities. Tourism creates employment directly in the tourism industry as well as in industries providing goods and services to the tourism industry. Data on direct employment in the tourism industry is extremely scanty. It may be inferred, however, that the impact of tourism on employment in small island developing States, where tourism makes an important contribution to national income, is considerable. In 15 Caribbean tourist destinations, a total of 77,319 hotel rooms accounted for 88,697 jobs, equivalent to 1.15 jobs per room. 4/ With the recent decline in the agriculture sector, in particular sugar and bananas, the relative share of tourism in employment has risen. In the South Pacific, tourism generated 27,500 jobs in direct employment in 1991 in the 10 member countries of the Tourism Council of the South Pacific (TCSP), with a population of about 5 million. Fiji accounted for 10,340 of this amount. 5/

10. In the Mediterranean region, overall employment in Cyprus exhibited an upward trend during the period 1980-1992, with the fastest growth occurring in tourism and related services. Employment in these occupations doubled from 33,000 jobs in 1980 to 64,000 in 1992. Hotels, restaurants and retail trade increased their share of employment from 17.9 per cent in 1980 to 24.3 per cent in 1992. 6/ In 1993, the total contribution of tourism to employment in Malta was roughly estimated at about 17 per cent of the labour force. In the African region, the available data for Mauritius and Seychelles indicate that during the period 1990-1994, the share of direct employment in tourism in total employment rose from 3.4 per cent to 4.8 per cent in Mauritius and remained stable at about 18 per cent in Seychelles. 7/

11. While the employment objective remains important for several small island developing States, the level of wages in the tourism industry is also important. The available information indicates that most jobs created in tourism are low-paying. This is to be expected in countries with high rates of unemployment, particularly of unskilled labour. The creation of low-paying jobs in the tourism sector in countries with relatively high rates of employment is the result of the strong pull factor of the relatively less physically demanding jobs in the tourism sector from more arduous jobs in the primary sector. This process exerts pressure on producers in the primary sector to modernize and increase capital intensity so as to permit a rising level of real wages; otherwise, the sector will lose its labour force and dwindle. This could marginalize important productive activities such as agriculture and fishing, and weaken the linkages of other sectors with tourism reducing the benefits derived from the tourism industry.

12. Tourism is likely to play an even more important role in the growth and development of small island developing States if appropriate measures are taken

to invigorate other sectors, in particular agriculture and fishing, so that they can more adequately meet tourist demand for consumer goods from domestic sources. Except for the very small ones, small island developing States can, with careful planning and provision of adequate facilities such as credit for mechanization, modernization and diversification, where necessary, support viable agricultural and fishing activities, as well as light manufacturing in addition to tourism. As intersectoral competition raises wage rates and incomes and reduces labour supply to the tourism sector, emphasis can be shifted to up-market tourism, with reliance on a slower rate of growth but of higher-spending visitors.

13. In evaluating the direct contribution of tourism to national income, gross levels of incomes or gross foreign exchange earnings are much less significant than net earnings after deductions have been made for all necessary foreign exchange expenditures of the tourism industry. The primary leakages of foreign exchange earnings from direct tourist expenditures arise from: (a) imports of materials and equipment for construction, (b) imports of consumer goods, particularly food and drink, (c) repatriation of profits earned by foreign investors, (d) overseas promotional expenditures and (e) amortization of external debt incurred in the development of hotels and resorts. The impact of these leakages varies greatly from country to country depending on the ability of countries to produce the goods and services necessary to meet the needs of the tourism industry. The estimates available for 17 countries or territories presented below show that the higher leakages pertain to small island economies.

Leakage of foreign exchange from gross tourism receipts

(Percentage)

1.	Fiji	56
2.	Cook Islands	50
3.	Saint Lucia	45
4.	Mauritius	43
5.	Aruba	41
6.	Hong Kong	41
7.	Jamaica	40
8.	United States Virgin Islands	36
9.	Seychelles	30
10.	Sri Lanka	27
11.	Antigua and Barbuda	25
12.	Cyprus	25
13.	Kenya	22
14.	Republic of Korea	20
15.	New Zealand	12
16.	Yugoslavia	11
17.	Philippines	11

Source: Travel and Tourism Analyst No. 3 (London, Economist Intelligence Unit, 1992).

14. Direct income from tourism provides only a partial picture of the contribution of tourism to national income. A complete picture would call for the estimation of tourism income multipliers in each small island developing State. Since expenditures of tourists give rise to the generation of additional incomes throughout the economy, the incomes and the associated employment thus induced can be considerable. Aside from the savings propensity of the local population, the size of the tourism income multiplier in a particular small island developing State depends on the extent of leakages of tourist expenditures overseas. The less the leakage of direct tourist expenditures, the higher the tourism income multiplier. Because of the complexities relating to the requisite data, however, the estimation of tourism income multipliers is beyond the scope of the present report.

2. Regional perspectives

15. At the regional level, the development of the tourism industry is more advanced in the Mediterranean and Caribbean small island developing States than in those located in the Asia-Pacific and African regions. The two Mediterranean small island developing States, Cyprus and Malta, have experienced brisk expansion of tourism in the past, which is reflected by the high share of tourism in their GDP and their total foreign exchange earnings. In both of them, however, industry remains the dominant sector. The good performance of tourism in these countries is explained in part by their advantageous location in the vicinity of high-income European countries, particularly the United Kingdom of Great Britain and Northern Ireland, their main source market.

16. In the Caribbean, with a larger number of small island developing States, the pattern of economic performance has become closely linked to the performance of the tourism industry. The direct contribution of tourism in terms of its share in GDP and export earnings is high in most of them. In the wider Caribbean, travel and tourism is the largest relative contributor to the regional economy, at 31.5 per cent of GDP. 8/ While in some, the economic base is relatively diversified, in the majority of them most other activities have become increasingly linked to tourism, with agriculture and industry lagging behind. This is particularly the case in the smaller islands which have become essentially service economies. The development of tourism in the Caribbean has been helped by considerable amounts of foreign investments and the fact that they are located in the tropics but in proximity to high-income North America.

17. The level of development of tourism and its contribution to economic development is more uneven and generally much lower in small island developing States of the Asia-Pacific region than in those in the Mediterranean and Caribbean. In most of them, the level of general economic development is also much lower. Six of them - Maldives, Samoa, Vanuatu, Tuvalu, Kiribati, and Solomon Islands - are actually classified as least developed. Tourism activities are concentrated in only a few. The contribution of tourism to national income is significant only in Fiji, Vanuatu, Samoa, Cook Islands and Maldives. By and large, in small island developing States of this region, agriculture and related activities predominate. Development of tourism in the region has been slow because of low levels of development of physical infrastructures and human resources in most of them, particularly the smaller

ones, isolation from the major sources of tourists, problems of communal landownership, extremely weak aviation and communication links, and heavy reliance on foreign investment, with foreign investors concentrating on the most profitable destinations.

18. In the African region, considerable progress has been achieved in tourism development in Seychelles and Mauritius. In the other three African small island developing States, Sao Tome and Principe, Cape Verde and the Comoros, all of which are classified as least developed, the development of tourism is still in an incipient stage. The slow pace of development of tourism in these countries is attributable to the slow pace of general economic development, and of the development of social and physical infrastructures and human resources in particular, as well as the inadequate importance attached to tourism as a growth sector in the past.

3. Emerging trends

19. The future development of tourism in small island developing States will be affected by two principal current global trends. First, global travel and tourism is expected to grow more rapidly in the coming years, outpacing the growth of world economic output. Between 1995 and 2005, travel and tourism is projected to grow by an annual average rate of 5.5 per cent in real terms and create 12.5 million new direct and indirect jobs annually on the average. 9/

20. In the wider Caribbean, travel and tourism output is projected to grow at an annual average rate of 3.6 per cent in real terms between 1995 and 2005 and to create 2.7 million jobs. 9/ For sustaining Caribbean tourism, the secretariat of the Caribbean Tourism Organization has identified a number of areas of action at the regional level, notably, maintenance of product quality, including the integrity of the natural environment; enhancement of profitability; provision of air access at competitive rates from major tourist markets; provision of a secure environment for the industry by combating crime and drugs; strengthening intersectoral linkages and creation of a regional competitive force through regional collaboration, particularly in the area of overseas marketing and promotion; and creation of social acceptability of the further expansion of tourism by the local population.

21. A similar trend is expected for Asia and the Pacific. The region as a whole is projected to be the fastest growing area in world tourism activities up to the year 2005. Between 1995 and 2005, the annual average real rate of growth of travel and tourism output in the region is estimated at 8.0 per cent. 9/ The South Pacific is expected to share in this growth through further growth of its traditional destinations, as well as through the gradual development of as yet untapped potentials in other islands. In most of the small island developing States of the South Pacific, the growth of tourism will require the removal of several major internal constraints, including the following: shortages of trained staff; inadequacy and infrequency of air transportation; low level and quality of supporting infrastructure - airport facilities, tour operation, restaurants; low budgets for marketing and promotion; lack of investment capital; and restriction on landownership. By far the greatest challenge for

the expansion of tourism in the South Pacific small island developing States will be their ability to achieve international competitiveness.

22. In the African region, Mauritius and Seychelles have planned for further growth but have opted for up-market tourism. They have consequently banned charter flight operations and hope to achieve a slower rate of growth of visitors, with emphasis on higher-spending visitors on scheduled flights. Of particular concern to these countries is the spread of drugs and of diseases such as the human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), which can impact very severely on their small populations. The other three African small island developing States have considerable room for growth and are just beginning to develop tourism as a growth sector.

23. In Malta and Cyprus, the rate of growth of tourist arrivals has slowed down in the recent past. This is attributable in part to capacity constraints and in part to deliberate policies to slow down expansion in order to deal with environmental and other adverse impacts of previous rapid expansion. Both countries plan to place considerable importance on tourism as a growth sector for quite some time to come, but have opted for up-market tourism.

24. A second discernible trend that will shape tourism development in small island developing States in coming years is the growing interest in and demand for specialty tourism. Underlying this trend is greater environmental awareness globally, greater health consciousness, and a growing preference by travellers to experience unspoilt environmental surroundings. In tandem with this trend, many small island developing States have embarked on a gradual policy of diversification of the tourism package emphasizing to a greater extent other natural assets than the beach and the sea. Diversification of the tourism product also reflects the realization on the part of the authorities in small island developing States of the need to innovate in order to remain competitive.

4. Risks of over-reliance on tourism

25. Over-reliance on tourism, especially mass tourism, carries significant risks. Economic recession in industrialized countries, their major source of tourists, and the impacts of tropical storms and cyclones to which many of them are particularly prone have devastating effects on the tourism sector and hence on tourism-based island economies. Mass tourism, unlike up-market tourism, is characterized by relatively high income elasticity of demand and is likely to fall off suddenly as a result of economic recessions in the source markets. Excessive reliance on a single major source of tourists, as in Cyprus and Malta on the United Kingdom market, is extremely risky as economic difficulties in the source country have direct adverse impacts on the receiving countries.

26. In small islands, there is a tendency for fast growth of tourism to be accompanied by inflationary pressures. Prices of real estate, particularly land suitable for building, which is extremely scarce, quickly rise beyond the reach of the local population. Inflationary pressures build up throughout the economy as the prices of locally produced construction materials and consumer goods rise. Although this process means higher profit margins in bottleneck sectors and could stimulate more inward investment, overly accommodating monetary policy

could generalize the inflation with adverse consequences for international competitiveness and future investment.

B. Social and cultural impacts

27. Sudden, rapid development of tourism can cause significant social disruptions in small island States. Pressures are exerted on households and communities by the upward pressure on land prices and prices of foodstuffs and household items. Among other things, potential long-run effects could be a reduction in the living standards of high proportions of island populations and a sense of alienation brought about by their lack of access to limited land resources. Many small island populations also suffer a loss of access to beaches and important leisure areas because of exclusive rights granted to developers. This, in some cases, also translates into economic losses as fishermen and others are adversely affected by loss of access to the sea. Furthermore, excessively high visibility of foreigners can lead to anxieties on the part of the local people and a tendency to blame local problems on them, and thus to a social rejection of the growth of tourism.

28. An important factor in sustainable tourism development in small island States is the tourist carrying capacity of these societies, in both environmental and social terms. At peak periods, visitors are known to outnumber nationals by multiples in several of the smaller islands. In larger islands such as Jamaica or Fiji, local concentration of tourism often leads to localized problems of carrying capacity, such as overcrowding of beaches, traffic congestion, noise pollution, increased incidence of drugs and crime, and the spread of diseases brought in from outside. Annex table 2 shows the ratios of tourists to local population for a number of small island developing States in 1993. 3/ While optimal carrying capacity cannot be quantified with any exactitude, it is generally contended that the population to tourists ratio, i.e., the inverse of what is shown in the table, should be kept at a level that does not exceed social tolerance limits, which may differ from country to country.

29. Island tourism is invariably centred on sun, sea and sand. However, to the extent that some interaction occurs with local customs and traditions, tourism is sometimes believed to exert a negative sociocultural influence on small island States. A high level of tourism can lead to commercialization, which is thought to cheapen local customs and traditions. Local arts and crafts and cultural practices are sometimes adapted to suit foreign tastes, which leads to the creation of contrived cultural products.

30. Some research conducted in the Asia-Pacific and Caribbean regions, however, has failed to produce much evidence of major destruction of local cultures as a result of the influence of tourists. 10/ On the contrary, the findings indicate that tourism can assist in preserving customs and cultures by providing incentives to invest in and promote them. If properly managed and promoted, local cultures can be given an impetus by the presence of tourists. It is contended, for instance, that the popularization of Jamaican reggae and carnival festivals of Trinidad and Tobago and similar cultural forms in other small island States is a direct result of the influence of tourism.

C. Environmental impacts

31. The fragile ecosystems of small island States and their generally more limited scope for action in development alternatives make concerns for the environmental impact of tourism very acute, particularly because the sector, which is almost totally dependent on the natural environment, is viewed by many small island developing States as a fast route to social and economic development. Intensive tourism development and tourism activities often have very quick and severe impacts on their natural resources. The principal tourism-related environmental difficulties confronting small island developing States are several.

1. Land resources and terrestrial biological diversity

32. The environmental impacts of tourism are attributable to the development of tourism infrastructures and facilities and to the impacts of tourists' activities. In small islands, even more so than elsewhere, there is strong competition for the use of land between tourism and other competing uses. Rising prices of building land increase the pressure to build on agricultural land. Deforestation and intensified or unsuitable use of land cause erosion and loss of biological diversity. In many small island developing States, ecosystems are now being threatened as a result of the development of tourism, which has intensified human interference with vegetation and wildlife. This can lead to irreversible damage to their valuable ecosystems and to traditional activities such as fishing.

2. Waste management

33. For small island developing States, treatment and disposal of liquid and solid wastes constitute a major problem. With limited physical infrastructure, the capacity of many small island States is already strained. This is exacerbated by wastes generated by tourism activities. Examples abound of damages caused by the disposal of untreated effluents into surrounding areas of land and sea. Pollution of scarce inland freshwater resources is one such example. The loss of valuable marine life, the destruction of coral reefs and the silting and erosion of coastal beaches, on which island tourism highly depends, are others.

34. Pollution from ship-generated wastes is also a major cause for concern for small island developing States. One dimension of this particular threat is the dumping of oily waste, sewage, garbage and cargo residues, which cause marine and beach pollution, by merchant ships plying their seas. Another dimension, particularly for the Caribbean, is the frequency of tourist cruise ships plying that region's seas and generating substantial volumes of liquid and solid wastes for disposal at the ports of call. The following factors have been cited as impeding corrective action: inadequate infrastructure; weak institutional, legislative and enforcement capacities; the absence of a regional consensus on appropriate criteria for sewage, effluents and coastal water standards; and the inability of small island developing States to require cruise ships and other vessels to comply with the provisions of the International Convention for the

Prevention of Pollution from Ships regarding generation and disposal of ship wastes.

3. Coastal area degradation 11/

35. Tourism as a mainly coastal development has already had a number of adverse impacts on small island developing States. In Mauritius, Seychelles, Malta, Cyprus and several islands in the Caribbean, the previously unchecked construction of tourism facilities along their coastlines resulted in the despoliation of much of the originally pristine beauty of these areas. In order to halt the degradation, the Governments of a number of these countries have, of late, taken steps through legislation to restrict and control coastal construction. Stipulations of building size, with limits on height and room capacity, and specifications of design and materials used in construction have been instituted in an effort to correct past errors and ensure better harmony with the natural environment. Beach destruction caused by intensive sand mining for tourism-related construction is also a feature of many coastal areas. This practice has recently been curtailed in Maldives, Seychelles, Mauritius, the Bahamas and Cook Islands, among other States. Beaches destroyed by sand quarrying are not being naturally replenished because of the destruction of coral reefs by sewage and other types of pollution. Erosion owing to tourism facilities and infrastructures built too close to the coast also contributes to beach destruction and coastal degradation. Another common feature of coastal area destruction in small island developing States is the removal of valuable mangrove forests, which act as nesting places for birds and other animal life in addition to their function as a natural barrier against encroachment of the sea. Indiscriminate diving, fishing and boating activities associated with tourism may further contribute to this disturbance. For a detailed discussion of coastal area issues in small island developing States, see the report of the Secretary-General on coastal area management in small island developing States (E/CN.17/1996/20/Add.7).

4. Freshwater resources

36. The problem of freshwater availability is most severe in the low-lying atolls that have the least opportunity for surface-water catchment and storage. Several other small island developing States also suffer from frequent droughts and chronic water scarcity. On the high volcanic islands, rainfall is in many cases abundant but access to freshwater is often limited by lack of adequate storage facilities and delivery systems. The supply of freshwater relative to the growing demand from agriculture, industry and households is becoming an acute problem in many small island developing States. Added to this is the growing competition of limited water resources from tourism, which is extremely water-intensive.

5. Climate change and sealevel rise

37. Island tourism is a climate-sensitive industry, and being largely concentrated in coastal locations is susceptible to sealevel rise. An analysis

of data by the Intergovernmental Panel on Climate Change has confirmed a trend in global warming, with increases in temperatures of 0.3 to 0.6 degrees centigrade occurring since the late nineteenth century, much of which has occurred in the past 40 years. 12/ The effect of this trend is a rise of mean sealevels at a rate of 1.5 millimetres per year. 13/ In small islands and coastal areas in general, that would cause the inundation of coastal and some inland areas, threatening sanitation systems and freshwater supplies as seawater infiltrates subterranean water tables, with possibly catastrophic consequences for island tourism. An erosion of shorelines would undoubtedly bring about severe stress and damage to both natural and built environments, the overall economic consequences of which are currently inestimable. In addition, damages from tropical storms with a possible link to changes in weather patterns have been increasing in recent years. Small island developing States that are especially vulnerable to these phenomena now experience considerable difficulty securing insurance coverage. Reliable sunshine is one of the major tourism assets of tropical islands. Potential threats of climate change, which are beginning to appear in greater health risks from direct exposure to sunlight, may undermine this asset.

II. MATTERS RELATED TO POLICIES, FINANCE, CAPACITY-BUILDING, TECHNOLOGY AND INFRASTRUCTURE

38. The present section discusses some of the main policy issues in the area of sustainable development of tourism at the national, regional and international levels. Emphasis is placed on legislation, finance, capacity-building, and sustainable tourism infrastructure and policies as necessary means of implementing the provisions of the Programme of Action.

A. At the national level

1. Development policy framework

39. Tourism development has been incorporated into the overall development plans of some small islands. Some Caribbean island authorities have established tourism master plans, with links to national development plans, and have created national sustainable development commissions or, as in the case of Saint Lucia, a National Sustainable Tourism Commission. In the South Pacific, tourism development plans and policies have been formulated in several small island developing States. However, the level of policy commitment to sustainable tourism development differs from country to country, which in turn influences the degree of action in this area. According to a study by the Economic and Social Commission for Asia and the Pacific (ESCAP), this uneven commitment in the South Pacific can serve as an impediment to the promotion of sustainability at the regional level. 14/ By and large, a long-term national policy for sustainable tourism development, with emphasis on natural resource conservation, has yet to evolve. The focus of policies generally continues to be on: (a) creating and improving conditions for attracting foreign investment in tourism; (b) marketing and promotion of tourism to achieve maximum growth in arrivals; and (c) designing the type of legislative framework that would further those objectives. The prevalence of this situation points to the urgent need

for a policy framework for sustainable tourism development in most small island developing States.

2. Legislative framework

40. A necessary requirement for the pursuit of sustainable tourism development is an effective legislative framework. A wide range of laws have been enacted in small island developing States, in many instances since the conclusion of the United Nations Conference on Environment and Development, establishing standards for land use in tourism development, tourism facilities and investment in tourism. Despite progress in the enactment of environmental legislation, its effectiveness continues to be impaired by weaknesses in the institutional frameworks for enforcing legislation, lack of standardization of legislation and the obscurity of regulations. Consequently, the level of enforcement of regulations to ensure sustainability in tourism in many small island developing States leaves much to be desired. Regulations for coastal zone management and the creation of prctected areas, both marine and land-based, present a case in point. Their enforcement, particularly in the Caribbean, remains very weak. 15/

3. Investment

41. The majority of small island developing States suffer from a lack of local capital for bulky investments and, in many cases, the absence of a significant local entrepreneurial class. The financing required for the development of the tourism sector is therefore obtained largely through foreign investment. Special efforts are made by Governments of small island developing States to attract foreign capital through the provision of tax breaks, tax holidays, building concessions and other incentives to foreign investors. While that may well be necessary to some extent, competition among small island developing States to attract foreign capital for tourism development often leads to the provision of over-generous financial incentives to foreign investors which deprive all these States of part of the income from tourism. Moreover, since small island developing States are over-reliant on foreign capital, they are unable to impose environmental sustainability conditions on foreign investors. Both to derive the maximum benefits from tourism and to avoid environmental deterioration from tourism activities, there is a need for small island developing States to jointly adopt uniform incentive and environmental policies, at least at the regional level.

42. While efforts at encouraging local investment and participation in the sector have increased in many small island developing States, considerably more effort is needed. Such efforts are, in many cases, hampered by the inability of the private sector in most small island developing States to raise adequate capital. A judicious mix of foreign and local investment, and especially the encouragement of joint ventures, would be one way of ensuring the adequacy of capital resources for sustainable tourism development and the fuller participation of nationals in the sector.

43. Aside from foreign direct investment in tourism, the bulk of tourism-related services are also known to be largely in the control of foreign

operators in a number of small island developing States. Overseas sales and marketing, and promotion of tourism packages for most small island developing States, are undertaken by outside entities. Several domestic operations are also handled by foreigners. In this area, there is a need for increased investments in the training of nationals for greater participation in tourism.

44. In order to supplement the efforts of the private sector at ensuring sustainability in the tourism sector, greater non-governmental organization/government partnerships in tourism development could be developed. Such partnerships can be useful, especially in the restoration, development and maintenance of cultural and historical sites, while ensuring conservation and profitability. Funds for investment in such activities could be raised through mechanisms already existing in many cases, such as increases in airport taxes and airline ticket taxes, as long as they meet International Civil Aviation Organization (ICAO) stipulations, and entrance fees for tourism sites.

4. Human and institutional capacity

45. Most small island States face the persistent problem of inadequate supply of trained manpower, particularly in government agencies responsible for the implementation and monitoring of standards and environmental regulations in tourism. The shortage of skilled human resources is compounded by the dispersion in some States of roles and responsibilities among several government agencies. To address these weaknesses, an integrated approach to tourism planning and environmental conservation, coupled with training at all levels, needs immediate attention in all small island States. A system for monitoring the implementation of sustainable tourism policies must also form part of an integrated approach to tourism planning and the building up of institutional capacity. A study by ESCAP found that national tourism organizations, important mechanisms in the development and implementation of sustainable tourism policies, are largely under-staffed and under-funded. 16/ The study also found that attempts by individual small island States to market their tourism product themselves have not been significantly effective in most cases because of the high costs involved and the lack of skilled human resources. Overall, the shortcomings of capacity could be better addressed through greater regional collaboration.

5. Infrastructure

46. The main physical infrastructural requirements for tourism development include the following: effective transportation facilities, including airports and air and/or sea carrier links; reasonably good road networks; telecommunication links; reliable energy supply systems; freshwater supply systems; accommodation facilities; restaurants and entertainment sites. For many small island developing States, the inadequacy of these infrastructures is an obstacle to the development of the sector. In some of the smaller Pacific islands in this category, efforts are being made to build new airport facilities. This is regarded as a necessary initial step to their fuller participation in tourism. In the Caribbean, where the sector is more developed,

air links to long-haul markets such as Germany, Italy and France are being extended.

47. Many small island developing States are confronted with severe infrastructural inadequacies consequent to the growth of tourism. Many of them suffer from chronic shortages of freshwater supply for their own use, a problem that is further aggravated by the high demand of large tourist populations. Liquid and solid waste disposal present a colossal problem to all small island developing States but especially to those that are tourism-based. Another dimension is added to this problem by the requirement of facilities to handle waste brought to their ports by cruise lines which frequent small island destinations.

48. The diversification of the tourism product through the development of nature and cultural tourism also necessitates additional infrastructural and environmental requirements. Some sites are remote and may require additional access routes and other infrastructures such as those for the supply of water and electricity, and new accommodation. These requirements are particularly burdensome to the archipelagic small island developing States. Generally, when developing infrastructure, the issue of the carrying capacity of the destination must also be considered.

6. Technology

49. Sector-specific technology needs of small island developing States are discussed in various reports to the Commission on Sustainable Development at its fourth session which highlight the need for the introduction or more widespread use of certain technologies by tourism enterprises and Governments of small island developing States, as appropriate. Some examples are: (a) solar technology for cooling of hotels and for water heating; (b) environmentally sound technologies for the treatment, recycling and disposal of solid wastes generated by tourism facilities and those brought to port by cruise ships; (c) telecommunications technologies for the fuller integration of small island developing States into global telecommunications networks to enhance their marketing and promotion operations; and (d) electronic information technologies to enhance day-to-day tourism operations, such as reservations.

B. At the regional level

50. The need for greater collaboration among small island developing States on issues of sustainable tourism development is well recognized. Collaboration and cooperation could lead to greater long-term benefits for the environment and the economies of small island developing States, particularly in an increasingly competitive global arena. The harmonization of standards and regulations, including legislative actions to govern tourism, has been identified as a critical need in the Programme of Action for the Sustainable Development of Small Island Developing States and by some regional authorities. Integrated tourism development planning, marketing and promotion can increase both effectiveness and efficiency. Joint overseas marketing and promotion would help achieve benefits of economies of scale and increased value-added in the tourism

sector. Overseas marketing and promotion by individual small island developing States entail a heavy cost to each of these States and reduce significantly their net foreign exchange earnings from tourism.

51. The Programme of Action provides for the pursuit of regional initiatives in: (a) the harmonization of standards and regulations to ensure that tourism and the environment are mutually supportive; (b) the promotion of cooperation in developing potential complementarities in the tourism sector; and (c) the establishment of mechanisms for information exchange and sharing of experiences, particularly through existing regional tourism organizations. The ESCAP report cited above has identified, in addition to those measures, the need for regional collaboration in: (a) integrating tourism development planning, including concerted market development and promotion; (b) strengthening and expanding the roles of national and regional tourism institutions and organs; and (c) promoting joint training and manpower development in tourism.

52. In recent years, attempts have been made, particularly in the two main regions - the Pacific and the Caribbean - to consolidate efforts in sustainable tourism development by forging common regional approaches for the sector. The necessary institutional framework currently exists for these regions in the form of the Tourism Council of the South Pacific and the Caribbean Tourism Organization. These institutions have been mandated by the respective regional political forums - the South Pacific Forum and the Caribbean Community (CARICOM) - to strengthen regional cooperation in tourism development, planning and promotion. Provision for some financial support has been made for both institutions under the Caribbean and Pacific regional tourism development programmes funded by the Lomé Convention concluded between the European Community and the African, Caribbean and Pacific States.

53. In spite of many difficulties, the Tourism Council of the South Pacific has been successful as a regional agency in the area of marketing and promotion of the South Pacific as a tourist destination, but not in the area of strategy and planning. For the Caribbean small island developing States, the political framework was consolidated with the formation in 1995 of the Association of Caribbean States (ACS), 17/ which has identified the tourism sector as one of three areas for high-priority measures for wider regional cooperation. Regional cooperation in the area of tourism has been further strengthened by the formation of the Caribbean Coalition for Tourism, with the goal of creating the largest possible pool of resources for cooperative marketing by drawing on the resources of the widest range of players both in the public and in the private sectors.

54. Resource constraint has been recognized as an impediment for both TCSP and CTO to adequately cover the broad range of activities that they must undertake to increase market awareness, promote sustainability, develop human resources and carry out marketing and promotion. External assistance is seen as essential to the viability of both institutions. Increased support for these bodies, aside from regional Governments, will be contingent upon increased involvement of the private sector in their work. The inadequacy of political will to cooperate meaningfully is also seen as a major impediment to effective cooperation in both regions.

55. In the African region, there is little evidence of meaningful effort at regional cooperation in the area of tourism development. This may be due in large part to the dispersion of the African small island developing States, three off the east coast and two off the west coast of Africa, and the considerable disparity in development and policy emphasis on tourism among these countries. Given the recognized potential for tourism development, however, there is a need to begin efforts within this region for a common approach to sustainable tourism development through an integrated subregional policy.

56. In the areas of joint training and manpower development, tourism research and experience-sharing efforts at regional collaboration have been made to varying extents within the regions. The pooling within each region of the limited financial and technical resources of individual small island developing States for capacity-building would be immensely beneficial to all those States. Collaboration in information exchange and research could be achieved through the strengthening of regional tourism institutions. A priority need in this respect is for training in the use of state-of-the-art information technologies at the regional level for the monitoring of environmental impacts of tourism, and for the establishment and operation of central reservation systems.

57. A major area for regional cooperation is air transportation. Two considerations are worthy of note in this connection. First, small island developing States cannot depend solely on foreign carriers, which must make decisions in the best interest of their owners regarding services, routes and schedules. Such decisions may not always coincide with the best interest of the countries. Besides, even a major airline serving small island developing States in a region can suddenly disappear. Secondly, small island developing States, except for a few, cannot each maintain a viable airline. An effective solution from the point of view of cost and adequacy of air transportation for the tourism industry would be regionally owned and managed carriers, with provision for regional functional cooperation. For a detailed discussion on air transport needs for small island developing States, see the report of the Secretary-General on air transport in small island developing States (E/CN.17/1996/20/Add.5).

III. COUNTRY EXPERIENCES

58. The economic prospects of many small island developing States depend significantly on a productive tourism sector. For the States, generally, the furtherance of sustainable tourism development is an economic as well as a socio-environmental imperative. In these countries, tourism actually provides an economic rationale for safeguarding the natural environment.

59. Many of the policies that underpin sustainable development were recognized and elaborated in a number of small island developing States prior to the United Nations Conference on Environment and Development and were given further impetus by it and by the Barbados Conference. For instance, Maldives, concerned about sustainability in the wake of rapid tourism development, recognized the need for the establishment of a National Environment Council to address those concerns as far back as 1985. The preparation of a national environment action programme, as well as a related work programme, was completed in 1989, with provision for

the systematic inclusion of environmental issues in the country's national development plan. Specific policies have been adopted to promote sustainable tourism development, particularly in the areas of waste disposal, use of coral reefs and construction in coastal sites and for the type and diversity of accommodation. 18/

60. Policies aimed at the creation of national parks and the encouragement of visits to wildlife refuges, bird sanctuaries and other natural beauty spots have been put in place in Seychelles and Mauritius as a means of diversifying the tourism product with a possible spin-off benefit for the protection and conservation of these sites. The drive for product diversification and the enhancement of natural endowments is also very strong in the Caribbean. Several legislative acts have been passed in individual countries of this region with the objective of addressing environmental problems. For example, in Saint Lucia, a National Sustainable Tourism Commission was established and a National Environmental Action Plan was prepared for implementation in 1994. A Minimum Standards Act was scheduled for adoption in 1995, with a view to addressing all areas of hotel, restaurant and tourist carrying capacity. A Development Control Act has also been approved by the Saint Lucia authorities, making the conduct of environmental impact assessment and its incorporation into all decision-making processes mandatory. Jamaica recently carried out a review of existing environmental legislation. The review resulted in the passage of new legislation requiring the conduct of environmental impact assessment for all new developments. 19/

61. In some small island developing States where rapid tourism expansion has given rise to problems of sustainability and over-reliance on tourism as a major sector, several measures have been taken in an attempt to overcome such problems. A case in point is Cyprus, where pollution, beach erosion, physical carrying capacity and difficulties of competitive pressures on other economic sectors have been felt. Efforts have been made through the use of economic instruments and legislation to achieve sustainability and balance. Various new tax incentives have been introduced to diversify and upgrade the tourism product and a new marketing strategy focus is directed at improving tourist quality. Additionally, fiscal instruments are now being used to encourage sound land use and coastal zone practices aimed particularly at slowing down and improving coastal development and efficient allocation and use of water and other resources. Simultaneously, a policy of economic restructuring in the manufacturing and agriculture sectors have been put in place in order to improve their overall competitiveness and linkages with tourism. 20/

62. Diversification within or away from tourism has been undertaken in many small island developing States, notably in Cyprus and Malta. Several constraining factors have been recognized, including a generally limited scope and capacity for novel forms of tourism development in small islands, a usually small proportion of visitors interested in other forms of activity, and more importantly, the fact that all aspects of tourism accommodation and other facilities have been geared towards traditional forms of tourism. The authorities in Mauritius and Seychelles have also adopted some policies for diversification within tourism, particularly in targeting high-spending visitors and in encouraging to some extent inland and nature tourism. In the foreseeable future, however, the need for continued mass tourism is acknowledged largely

because of an existing over-capacity in tourism. A spin-off benefit of the thrust for quality has been a general upgrading of facilities and greater attention to avoiding negative impacts. Mauritius has been relatively successful in achieving some degree of economic diversification and balanced growth through the development of export processing zones and, to a lesser extent, agricultural modernization and diversification.

63. In the Comoros and Cape Verde, the Governments and private sector have recently demonstrated heightened interest in tourism development. The institutional groundwork has been prepared in the Comoros with the adoption in 1994 of a national environmental policy document and an environmental plan of action, and the creation in 1995 of the Association Touristique Comorienne. The implementation of these plans, however, is subject to a number of constraints, including poor levels of infrastructure development, particularly hotels, poor air and communication links with tourist-generating areas and some degree of political instability. Recent initiatives in Cape Verde include the adoption of a tourism development plan and the establishment of a National Institute for Tourism. The main constraints identified are the following: a lack of interest by the local and foreign private sector; a lack of demonstrated support by donors for the tourism development plan; and limited domestic financial resources. 20/

64. Dominica has formally launched eco-tourism as the main form of tourism development. The island is mountainous, boasts few beaches but has 60 per cent forest cover containing many endemic species of plants, animals and birds. Two large national parks, two forest reserves and a Carib Indian reservation form the basis of eco-tourism attractions. The Government of Dominica has enacted legislation to ensure heritage and natural resource preservation, and the creation of linkages with local economic activities. While no scientific assessment has been conducted of the impact of increased human activity on the natural environment, several negative trends have been observed, among which are the accumulation of litter and garbage around nature sites, the extraction of plants from protected areas and the effects of the use of soap by local people in rivers and natural pools. Based on the experience of Dominica, concerns have been expressed regarding issues of carrying capacity and the impact of large numbers of tourists on environmentally sensitive ecologies. Although the adoption of regulations and policy guidelines can be seen as an indication of government commitment to sustainability, weaknesses persist in the management and policing of protected areas and tourism sites. Another unique feature of the experience of Dominica is the emphasis on participation by the local population through tax exemptions for local shareholder participation in hotels and other ventures.

IV. EXPERIENCES OF MAJOR GROUPS AND NON-GOVERNMENTAL ORGANIZATIONS: THEIR ROLE AND INVOLVEMENT IN THE PROMOTION AND MAINTENANCE OF SUSTAINABLE TOURISM DEVELOPMENT IN SMALL ISLAND DEVELOPING STATES

A. Private sector

65. A survey conducted by the World Travel and Tourism Council indicates that in much of the private sector, the pursuit of sustainability measures in tourism is gradually becoming a matter of sound business practice. 21/ Little by little, recognition of the link between conservation measures on the one hand and profitability and competitiveness on the other is taking hold. Some private sector companies involved in travel and tourism have reported positive results from conservation measures, in the form of increased profitability, a rise in staff morale and an enhanced image among their clientele. In order to develop voluntary practice approaches, tourism industry associations have emphasized the use of voluntary environmental codes of conduct and guidelines. Through a survey and publication, the United Nations Environment Programme (UNEP)/Industry and Environment Programme Activities Centre has identified more than 30 codes, among them, those prepared by main industry associations such as the World Travel and Tourism Council, the Pacific Asia Travel Association, the American Society of Travel and the International Hotels Environment Initiative. 22/

66. An emerging feature among some multinational businesses, particularly in the hotel sector, is resort to voluntary measures for conservation, primarily with a view to securing strategic advantages, but also as a means of precluding more costly retrofitting that may be required by future government regulations. However, to date, most efforts have focused on energy and water conservation, waste minimization and product purchase. New tourism developments should more often incorporate improved plant designs, and improved energy-efficient features that will enable greater natural lighting, natural cooling of accommodation facilities, and waste treatment and water recycling.

67. Already, some progress can be noted: hotel staff are being trained to adopt energy- and water-saving, and waste-minimization measures during cleaning; and hotel guests are being encouraged to minimize water use by the reuse of towels and linens. Product purchase measures are being instituted, for example, through switching from phosphate-free cleaning products to those known to have less harmful properties. In the Asia-Pacific region, the development of integrated resorts is setting a new trend in resort development with the key objective of exercising greater control over environmental quality as a means of providing a guarantee of quality to guests. New complexes are built with all facilities on site, with particular emphasis on water conservation and recycling, energy supply and conservation, and waste management.

B. Non-governmental organization and community involvement

68. The growing trend of environmental awareness globally is accompanied by an increase in international and national environmental movements in tourism development. For instance, at the international level, the International

Scientific Council for Island Development, with the support of the Government of Spain and the sponsorship of several organizations, spearheaded the convening of the World Conference on Sustainable Tourism at Lanzarote, Canary Islands, in April 1995. The Conference adopted a Charter for Sustainable Tourism which affirms, inter alia, that: (a) tourism must be sustainable and integrated with the natural, cultural and human environment; (b) the achievement of sustainability is contingent upon integrated planning and cooperation at all levels; (c) tourism development must contribute to local economic development and improve the quality of life of all people; and (d) the benefits and burdens of tourism must be more equitably distributed. In consequence of the Conference, a follow-up committee responsible for the dissemination of the Charter and for the promotion of related studies, projects and actions was established; and the launching of a European network for sustainable tourism development in islands and coastal zones was proposed. The objective of the network is to generate and diffuse information and know-how on the promotion of environmentally sound tourism. Like industry associations, non-governmental organizations such as the Ecotourism Society and the World Wide Fund for Nature Tourism Concern have also developed codes of conduct and guidelines for tourism. At the regional level, the Caribbean Conference on Sustainable Tourism, which was held at Punta Cana, Dominican Republic, towards the end of 1995, under the sponsorship of Earthkind International and the Earth Pledge Foundation, explored a wide range of issues relating to sustainable tourism in that region. A similar conference is planned for the South Pacific in 1996.

69. At the local level, the involvement of non-governmental organizations, community groups and local authorities in the promotion and development of sustainable tourism policies is just beginning but a discernible trend is apparent in some small island developing States. The following are examples of recent initiatives: in Trinidad and Tobago, a project has been put in place at Matura Beach to train community youths as tour guides, with the goal of preventing poaching of leatherback turtles, an endangered species; in Jamaica, resort boards, which include representatives of non-governmental organizations, the local community and business enterprises, have been established in the main tourism areas of Ocho Rios, Montego Bay, Negril and Port Antonio for overseeing all aspects of tourism policy, practice and development; in Mauritius, the authorities have published The Mauritian Code of Ethics for Tourism: For Mauritians. The Code, which focuses largely on the social and cultural aspects of tourism, presents guidelines for use by the local community in their dealings with tourists.

V. ACTIVITIES AND EXPERIENCES IN INTERNATIONAL COOPERATION IN SUSTAINABLE TOURISM DEVELOPMENT

A. Organs of the United Nations system

70. A number of organizations and bodies of the United Nations system have reported plans and activities in the area of tourism development, in keeping with the Programme of Action. The United Nations Development Programme has reported that its programme of assistance in the South Pacific and in some small island developing States in the other regions addresses issues relating to sustainable tourism development within the overall national environmental plans

of the countries concerned. The Economic Commission for Latin America and the Caribbean (ECLAC) and ESCAP have planned or recently implemented specific activities in tourism. ECLAC has reported that proposals for environmental codes of conduct for the tourism sector, which it recently developed, are now being carried out by the Caribbean Tourism Organization. ESCAP has reported that in 1995, it convened a workshop on integrated tourism planning in Pacific island countries and published a set of studies on foreign investment in the tourism sector in Samoa and Vanuatu. The United Nations University is currently undertaking a study to examine indicators of sustainability for the tourism sector in small islands, along with a project on eco-tourism. It is expected that the results of these two undertakings will be useful to small island developing States.

71. In 1992-1993, the World Heritage Convention, sponsored by the United Nations Educational, Scientific and Cultural Organization (UNESCO), in collaboration with UNEP, carried out surveys on tourism management in natural and mixed heritage sites and subsequently convened an international seminar which helped formulate a set of general principles for tourism development in natural heritage sites. During 1994-1995, UNESCO collaborated with several regional initiatives on tourism in the Asia-Pacific region. The Earth Sciences Division of UNESCO has undertaken modelling of human-induced geomorphologic change to serve as a guide to improved planning of human settlements. In addition, UNESCO has planned a world heritage promotion seminar for the Caribbean, and a pilot project on water supply problems and community attitudes in the South Pacific islands, as well as studies with reference to the Caribbean on the interrelationships between tourism, population pressures, pollution and natural hazards. In 1993, through the Pan American Health Organization Regional Office, the World Health Organization collaborated with a number of regional organizations to launch the Environmental Health and Sustainable Tourism Development Initiative for the Caribbean and to convene the Regional Conference on Environmental Health and Sustainable Development in the Caribbean. UNEP is making efforts to promote integrated coastal zone management in small island developing States through its regional seas programme. The Mediterranean Action Plan and the Caribbean Action Plan have in particular addressed tourism issues. The Industry and Environment Office of UNEP has developed fruitful partnerships with industry associations at the international level to inform about and disseminate examples of good environmental practices, in particular on codes of conduct and environment management of hotels. The Food and Agriculture Organization of the United Nations has planned two regional workshops in 1996, one for the Caribbean and one for the South Pacific small island developing States. One of the items on the agenda of both workshops will be linkages of tourism with agriculture, forestry and fisheries. 23/

B. Other intergovernmental bodies

72. In addition to the Tourism Council of the South Pacific and the Caribbean Tourism Organization, both of which are intergovernmental bodies whose activities have been discussed above, the Organization of American States (OAS) and the European Union have been active in promoting sustainable tourism development in small island developing States. OAS has assisted Caribbean small island developing States in various policy studies on sustainable tourism. The

European Union has provided assistance, under ongoing cooperation arrangements, in carrying out a number of tourism development projects in African, Caribbean and Pacific small island developing States.

VI. MAIN FINDINGS

73. Tourism already makes an important contribution to economic growth, employment and foreign exchange earnings in the majority of small island developing States. It provides an opportunity to most of them for economic diversification and growth.

74. Looking to the future, there are indications that the development of tourism in small island developing States will be subject to two current global trends. First, global travel and tourism output is expected to grow more rapidly in coming years, outpacing the growth of world economic output. This trend is expected to reinforce current trends in small island developing States. Secondly, tourism development in these countries will be shaped by the growing interest in, and demand for, specialty tourism, particularly nature tourism propelled by growing environmental awareness. To these trends may be added another, namely, an apparent upward trend in global warming and sealevel rise, the persistence of which would have devastating impacts on island tourism.

75. From the point of view of the future course of action, the following findings on the economic, social and environmental aspects of tourism in small island developing States are worthy of note:

(a) Economic aspects. (i) Generally, the leakages through imports out of direct tourist expenditures to meet the needs of the tourism sector itself are extremely high in these countries; (ii) the daily expenditures per visitor vary from country to country but are generally low; (iii) excessive reliance on tourism carries many risks, including excessive exposure to international economic shocks and weakening of intersectoral linkages which, inter alia, reduce the potential benefits from tourism;

(b) Social aspects. Rapid development of tourism, particularly mass tourism, can have significant adverse social impacts in small islands. The following are of particular significance: (i) persistent inflationary pressures pose the danger of significantly worsening the household distribution of income; (ii) the social carrying capacity of small islands quickly reaches its limits of tolerance as the ratio of visitors to the local population rises, causing overcrowding of beaches, noise pollution and exacerbating traffic congestion; (iii) prolonged growth of mass tourism may be accompanied by increased incidence of crime, and spread of drugs and diseases, including HIV/AIDS;

(c) Environmental aspects. Intensive tourism development and tourism activities, particularly if not properly planned and managed, can very quickly cause environmental damages in small island developing States. The most notable impacts are observable in (i) land degradation and loss of terrestrial and marine biodiversity; (ii) increased levels of pollution from dumping of solid and liquid wastes generated by tourism activities on land and in the sea; (iii) coastal zone degradation through intensive sand mining, removal of

mangrove forests and destruction of coral reefs, erosion and destruction of landscape owing to tourism facilities and associated infrastructures; (iv) freshwater shortages aggravated by the demand from the water-intensive tourism industry, excessive groundwater pumping and consequent lowering of water tables.

Notes

1/ Report of the Global Conference on the Sustainable Development of Small Island Developing States, Bridgetown, Barbados, 25 April-6 May 1994 (A/CONF.167/9 and Corr.1 and 2) (United Nations publication, Sales No. 94.I.18 and corrigenda), chap. I, resolution 1, annex II.

2/ The World Tourism Organization has been trying to get international agreement on how to measure the contribution of tourism to national economies and has proposed a Standard International Classification for Tourism Activities to resolve this issue. The proposal has been adopted, in principle, by the United Nations Statistical Commission.

3/ The tables are available in the Small Island Developing States Unit of the Department for Policy Coordination and Sustainable Development. They will be provided on request.

4/ Estimate of the Caribbean Tourism Organization, as quoted in The Financing Requirements of Nature and Heritage Tourism in the Caribbean (Washington, D. C., Organization of American States, 1995), p. 39.

5/ Investment and Economic Cooperation in the Tourism Sector in Pacific Island Countries, Tourism Review No. 13 (Bangkok, Economic and Social Commission for Asia and the Pacific, 1994), p. 167.

6/ George Vassiliou, "Tourism and sustainable development lessons from the Cyprus experience", in Critical Issues in the Sustainable Development of Small Developing Islands, World Development Studies, No. 1 (Helsinki, World Institute for Development Economics Research of the United Nations University, 1995).

7/ Based on data received from national authorities.

8/ Travel and Tourism's Economic Perspectives (London, World Travel and Tourism Council, 1995), pp. 22-23.

9/ Ibid., p. 1.

10/ Eric Blommestein, "Sustainable tourism in the Caribbean - an enigma?" in Mark Griffith and Bishnodat Persaud, (eds.), Economic Policy and the Environment - The Caribbean Experience (Kingston, Jamaica, University of the West Indies, 1995), pp. 208-210.

11/ The report of the Secretary-General on the protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas

and the protection, rational use and development of their living resources (E/CN.17/1996/3) uses the Agenda 21 terminology "coastal area". The same terminology is used here for the sake of consistency and to avoid confusion. The terminology used in the Barbados Programme of Action is "coastal zone".

12/ See The Second Assessment Report Adopted by the World Meteorological Organization/United Nations Environment Programme Intergovernmental Panel on Climate Change (Rome, December 1995).

13/ Intergovernmental Oceanographic Commission Workshop Report No. 96 (Paris, 1994), p. 2.

14/ See Sustainable Tourism Development in Pacific Island Countries (Economic and social Commission for Asia and the Pacific, 1992).

15/ Joy E. Douglas, "Ecotourism: the future for the Caribbean?" in Industry and Environment (Paris, United Nations Environment Programme/Industry and Environment Programme Activities Centre, 1992), p. 66.

16/ Sustainable Tourism Development in Pacific Island Countries ...

17/ Formally established in August 1995, ACS includes all CARICOM member States, other non-CARICOM islands of the Caribbean and the neighbouring States of Central and South America.

18/ Edward Inskeep, "Sustainable tourism development in the Maldives and Bhutan", in Industry and Environment (Paris, United Nations Environment Programme/Industry and Environment Programme Activities Centre, 1992), pp. 31-34.

19/ Information based on national presentations to the meeting of the Consultative Group on Environmental Health and Sustainable Tourism Development in the Caribbean, held in Nassau, Bahamas, in November 1994.

20/ Based on information received from national authorities.

21/ Travel and Tourism, 1994 Review (London, World Travel and Tourism Council/World Travel and Tourism Environment Research Centre).

22/ Environmental Codes of Conduct for Tourism, Technical Report No. 29. (Paris, United Nations Environment Programme/Industry and Environment Programme Activities Centre, 1995).

23/ Based on submissions from these agencies for the preparation of the present report.